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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

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(WITH BALANCE SHEET FOR 1935)

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WILLIAM HARRISON PEARSALL,

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Nottingham, Public Nat. Hist. Museum (H. P. Jones, F.R.E.S., Director), Wollaton Hall.
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Rothschild, Hon. Mrs N. C., Arundel House, 4 Palace Gardens, W.
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St Cyres, Viscountess, Walhampton, Lymington, Hants.
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*Wedgwood Herbarium, The, Marlborough College, Wilts.
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Weyer, William Van de, Clyffe, Dorchester.
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†Wright, Dr F. R. Elliston, Braunton, N. Devon.

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Young, Miss Gertrude, 5 Woodlands Terrace, Glasgow.
Yuill, Edward, Chingford, Askham Lane, Acomb, York.

THE

BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

REVENUE ACCOUNT FOR 1935.

Balance from Balance-Sheet for 1934,	£125	10	0	Printing Reports (and carriages, &c., connected),	£139	12	0
Subscriptions for 1935 received in 1935,	185	4	0	Expenses of Distribution,	1	15	3
Subscriptions paid in advance,	19	0	0	Postages and Petty Expenditure generally (Secy. and Assistant Secy.),	20	13	0
Sales of Reports, Reprints, and Advertisements,	20	15	0	One Year's Allowance to Secretary,	50	0	0
				Insurance,	0	6	0
				Cheque Book and Stamps,	0	4	8
				Balance,	137	18	1
	£350	9	0		£350	9	0

PUBLICATIONS ACCOUNT.

Balance from Balance-Sheet for 1934,	£104	9	6	Balance,	£109	18	4
Sales of Comital Flora,	4	14	6*				
Sales of British Plant Lists,	0	14	4				
	£109	18	4		£109	18	4

*Excluding £6 for 1935, received since the Account was balanced.

BALANCE SHEET.

Balance from General A/c.,	£137	18	1	National Savings Certificates, at cost,	£256	16	0
Balance from Publications Account,	109	18	4	National Savings Certificates, at cost,	143	4	0
Balance from Life Members' Fund,	116	8	0	Balance in Bank, £50 1 6			
Balance of Miss Trower's Fund,	16	7	11	*Less* Subs, for 1936, 28 16 6			
Balance of Benevolent Fund,	41	3	6		21	5	0
				Cash in Hand,	0	10	10
	£421	15	10		£421	15	10

22nd January 1936.—Examined with the books and vouchers and found correct.

(Signed) F. A. Bellamy, M.A., F.R.A.S.

SECRETARY'S REPORT.

As this Report commences a new volume, it contains a complete list of members' names and addresses. Those published in the Report for 1932 were bound to be extremely useful in facilitating correspondence between members.

I am pleased to report that the position of the Society continues to be very satisfactory. During the year our expenses have been reduced by about £70, and we have added 23 new names to our membership, as against 15 last year. This is most encouraging, and proves that the varied services rendered by the Society are greatly appreciated. Much valuable field-work has been accomplished by members during 1935 and many interesting discoveries have resulted, particulars of which will be found in the Report. It is gratifying to record that among members the keen sense of their communal obligations and their willingness to render service for the common good continue to be most marked.

We regret to record the passing of several members whose services to the Society have been greatly valued through many years:—T. R. Gambier-Parry, M.A.; Miss Ida M. Roper, F.L.S.; Edgar Thurston, C.I.E.; F. A. Bellamy, M.A.; and F. R. Ramson, F.C.S.

The Annual Meeting was held in the rooms of the Linnean Society on March 27, and was well attended. The Right Hon. Harold T. Baker, P.C., was again elected Chairman; Sir Roger Curtis, Bart., as Treasurer; and Mr W. H. Pearsall as Secretary. All the members of the General Committee were re-elected. The meeting concluded with an expression of our indebtedness to the Council of the Linnean Society for the use of their rooms on so many occasions.

In order to facilitate an earlier publication of our Reports, we should be glad to receive all plant Records by December 31st. As each record has to be card-indexed, it would save much time and labour if members would use the ruled cards (12.5 × 7.5 cm.) sold by stationers for this purpose, and on each write (1) the Oxford List number, (2) the name of the plant, (3) the locality, giving the vice-county, (4) any additional note of Scientific interest, (5) the collector's name. (Rule *two* lines under the name of the plant and also under that of the collector.) As regards MS., the latest date upon which any can be received is March 31st in each year. Members are invited to submit original papers or articles upon subjects of botanical interest. Altogether apart from the value of the Society's publications is that of its correspondence. Members are invited to submit any of their botanical difficulties to the Secretary, who assures them that he is always delighted to render any assistance in his power.

As in previous years, we are deeply grateful for the very willing and invaluable co-operation of all those who have rendered assistance in the examination of critical British plants or who have given ready and valuable help in other directions. We tender our sincerest thanks to the authorities of the Royal Botanic Gardens at Kew and to those of the British Museum at Cromwell Road. Their kindly offices have been beyond all praise. Among foreign botanists we are indebted to the late Prof. O. E. Schulz, Dr B. Lindquist, and Prof. M. L. Fernald. We are deeply appreciative of the valuable help rendered by the following British botanists:—Mr J. Ramsbottom, Mr A. J. Wilmott, Dr Geo. Taylor, Mr A. B. Jackson, Mr J. S. L. Gilmour, Dr W. B. Turrill, Dr T. A. Sprague, Mr A. D. Cotton, Mr N. Y. Sandwith, Lieut.-Col. A. H. Wolley-Dod, Mr E. B. Bishop, Rev. H. J. Riddelsdell, Mr W. C. Barton, Mr H. W. Pugsley, Mr W. O. Howarth, Mr P. M. Hall, Dr W. A. Sledge, Mr A. E. Wade, Mr C. E. Britton, Dr R. W. Butcher, Dr F. W. Stansfield, Mrs H. Drabble, Mrs Gertrude Foggitt, Lady Davy, Miss E. Vachell, Miss M. S. Campbell, and Miss G. Wigglesworth.

ANNUAL MEETING, MARCH 25, 1936.

ELECTIONS.

Chairman—The Rt. Hon. Harold Baker, P.C.

Vice-Chairman—J. Ramsbottom, O.B.E., M.A., F.L.S.

Treasurer—Sir Roger Curtis, Bart.

Secretary—W. Harrison Pearsall, Green Gable, Matfield, Kent.

General Committee:

Baring, Hon. Mrs G.
Butcher, Dr R. W.
Chapple, John F. G.
Corstorphine, R. H., B.Sc., F.L.S.
Davy, Lady J.
Druce, Francis M. A., F.L.S.
Foggitt, Mrs Gertrude.
Gilmour, J. S., M.A.
Hall, P. M., F.L.S.
Sandwith, N. Y., M.A.
Simpson, N. Douglas, M.A.
Sledge, Dr W. A.
Vachell, Miss Eleanor, F.L.S.
Wade, A. E., F.L.S.
Wedgwood, Mrs M. L.
Wilmott, A. J., M.A., F.L.S.

LOCAL SECRETARIES.

8. South Wilts. Miss Barbara Gulliek, B.Sc., Crane Bridge Road, Salisbury.
11-12. Hants. P. M. Hall, Esq., F.L.S., 12 High Street, Fareham, Hants.
18-19. Essex. Miss M. S. Campbell, Layer Marney Hall, Kelvedon, Essex.
35. Monmouthshire. A. E. Wade, Esq., F.L.S., Dept. of Botany, Nat. Museum of Wales, Cardiff.
41. Glamorgan. Miss Eleanor Vachell, 8 Cathedral Road, Cardiff.

49. Carnarvonshire. Norman Woodhead, Esq., M.Sc., University College of N. Wales, Bangor.
53-54. Lincolnshire. F. J. Baker, Esq., City and County Museum, Lincoln.
62, 65. Yorkshire, N. Riding. Miss C. M. Rob, Catton Hall, Thirsk, Yorks.
66-68. Northumberland and Durham. Geo. W. Temperley, Esq., 4 Selborne Avenue, Low Fell, Gateshead.
94-95. Moray and Banff. Rev. George Birnie, The Manse, Speymouth, Morayshire.

CORRIGENDA.

B.E.C. 1934 Rep. (1935).

p. 825. No. 183/6e should read 195/14 *Pyrus latifolia* Syme.
No. 195/13c should be 195/9 *Pyrus intermedia* Ehrh.
p. 826. No. *211/4 should be 211/2 *Sedum rupestre* L.
p. 885. The paper on Limosella was entirely written by Lady Davy, to whom my apologies were sent. My name should obviously have been printed within the brackets.

DESIDERATA.

We shall be grateful to any member who can send a fresh and typical specimen of any of the following list—still needed—to Miss Lucy Burton, Stott Park, Lakeside, Ulverston, Lancs:—

43. *Roemeria hybrida*. 84. *Brassica adpressa*. 124. *Viola arenaria*. 130. *Dianthus Armeria*. 138. *Silene gallica*. 148. *Sagina Linnaei*. 192. *Linum angustifolium*. 251. *Trifolium maritimum*. 290. *Lathyrus hirsutus*. 311. *Rubus Chamaemorus*. 364. *Sedum dasyphyllum*. 370. *Sedum reflexum*. 380. *Saxifraga caespitosa*. 451. *Caucalis latifolia*. 489. *Valerianella carinata*. 487. *Valeriana pyrenaica*. 519. *Inula Pulicaria*. 520. *Xanthium Strumarium*. 531. *Anthemis tinctoria*. 552. *Senecio campestris*. 590. *Lactuca saligna*. 591. *Lactuca alpina*. 627. *Vaccinium uliginosum*. 665. *Pinguicula alpina*. 719. *Orobanche caryophyllacea*. 721. *Orobanche elatior*. 724. *Orobanche ramosa*. 729. *Verbascum nigrum*. 774. *Melampyrum arvense*. 794. *Nepeta Cataria*. 904. *Urtica pilulifera*. 982. *Liparis Loeselii*. 987. *Cephalanthera ensifolia*. 992. *Epipogum aphyllum*. 995. *Spiranthes Romanzoffiana*. 1008. *Habenaria intacta*. 1039. *Lloydia serotina*.

OBITUARIES.

Thomas R. Gambier-Parry; died February 15, 1935, aged 52. Elder son of Major E. Gambier-Parry of Higham Court, Gloucester, nephew of Sir Hubert Parry the composer. Educated Eton and Magdalen College, Oxford. Senior Assistant of the Bodleian Library and later Keeper of the Oriental Department. F.S.A., F.R.H.S., student of Sanscrit, authority on Heraldry, on Liturgies, on Oxford Records, on Numismatics. These are the bare facts of a singularly brave life, since united with a most brilliant brain and marvellous memory went a crippled, frail and constantly suffering body, to which handicap he ever rose superior. The study of wild flowers was to him a blessed relaxation and joy, and his botanical knowledge was wide and sound. With Dr Druce and other friends he toured the British Isles to obtain personal acquaintance with as many species as possible, and his efforts to scale the mountains for their treasures were undaunted and ofttimes pathetic. Kindly, modest, selfless, loyal and patient he possessed a quite vast number of friends of all ages, and to them he has left behind the abiding memory of "a very gallant gentleman."—G.F.

Miss Ida M. Roper (1865-1935), who died at Bristol, June 8, 1935, was widely known for her energy as a good field botanist, and for the splendid work she did throughout thirteen years in supplying and arranging wild plants for the Bristol Museum. She had given great help to the late J. W. White in "literary research and in revision and correction for the press" of his *Flora of Bristol*, 1912. And her work as Hon. Secretary and Librarian of the Bristol Naturalists' Society, of which she was President for three years, was very great. Her specimens were well selected and carefully dried, and her large herbarium is now much appreciated at the University of Leeds. She had long been a valued contributor to both the Botanical Exchange Clubs. The study of Plant Galls was also one of her activities.

But Miss Roper for many years also found time to do some very useful work in regard to monumental effigies, and in 1930 was published her handsome work on "Monumental Effigies of Gloucestershire and Bristol."—H.S.T.

Edgar Thurston, C.I.E., died suddenly at Penzance on the 5th of October 1935, at the age of 80. In 1885 he was appointed Superintendent of the Government Museum, Madras, a position he held for many years. He was an authority on the ethnography and anthropology of Southern India.

After his retirement, Thurston lived chiefly in Cornwall and devoted most of his time to a study of the flora of the county. In 1922 he published a Supplement to F. Hamilton-Davey's "Flora of Cornwall" (*Journ.*

Roy. Inst. Cornwall, xxi). This was followed by seven papers (1923-29) on the Cornish flora, all but the last in collaboration with Dr C. C. Vigurs. In 1930 he published an interesting book under the title "British and Foreign Trees and Shrubs in Cornwall."

In March 1919, Thurston presented his valuable Cornish Herbarium to the Royal Botanic Gardens, Kew. To it he added large numbers of new specimens from year to year, making it a relatively complete county herbarium.

By the death of Edgar Thurston British botany has lost an enthusiastic worker, Kew a generous donor, and many of us a valued friend, who, with an ever-youthful outlook on life, carried good cheer as a gift to all with whom he came into contact.—W.B.T.

PLANT RECORDS.

*=New vice-county record.
†=Not native in this locality.
Black letter=An addition to Druce's List of British Plants.

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†1/2. Clematis Flammula L. Avonmouth Docks, West Gloucester, v.-c. 34, October 1934, H. J. Gibbons.

2/2. Thalictrum minus L. Plumpton, E. Sussex, v.-c. 14. Complete specimens of this, previously reported in B.E.C. 1932 Report, 87 (1933), have been now submitted to Dr Butcher for critical examination and he has determined them as *T. collinum* Wallroth, L. A. W. Burder.

*6/4. Ranunculus auricomus L. Rona, Raasay and Scalpay Islands, North Ebudes, v.-c. 104, Prof. J. W. Heslop Harrison.

6/7b. Ranunculus Flammula L., var. angustifolius Wallr. Sedbergh, N.W. Yorks, v.-c. 65, Mrs Grace Cory.

6/7h. Ranunculus scoticus E.S.M. The range of this species in Ireland is still incompletely worked out, but it is now recorded from 11 v.-cs., from Londonderry to Wicklow, R. L. Praeger.

6/13. Ranunculus parviflorus L. Common as a weed in the garden of Bassett Down House, near Wroughton, N. Wilts, v.-c. 7, T. R. G. Moir.

6/22. Ranunculus trichophyllus Chaix. Near East Meon, S. Hants, v.-c. 11, P. M. Hall, N. D. Simpson, and E. C. Wallace.

6/24c. Ranunculus heterophyllus, var. submersus Bab. Stream running into Dunnet Bay, Caithness, v.-c. 109, Mrs G. Foggitt. Det. W.H.P.

6/26. Ranunculus pseudo-fluitans B. & F. R. Teifi, below Tregaron, Cardigan, v.-c. 46. P. M. Hall and Dr Sledge Det. W.H.P.

7/1c. Caltha palustris L., var. Guerangerii (Bor.). Between Selham and S. Ambersham, W. Sussex, v.-c. 13, P. M. Hall and E. C. Wallace.

9/2. Helleborus foetidus L. Near West Malling, E. Kent, v.-c. 15, Miss L. Abell; Wood at Castle Frome, Herefordshire, v.-c. 36, F. M. Day.

11/1. Aquilegia vulgaris L. Guiting, E. Gloster, v.-c. 33, Miss L. Abell.

20(2)/1. **Sarracenia purpurea** L. A few plants introduced in Co. Roscommon in 1926 have now increased to many thousands, R. L. Praeger, 1935.

21/4. Papaver Lecoqii Lamotte. Railway bank between Tonbridge and Hildenborough, W. Kent, v.-c. 16, J. P. M. Brenan.

†30/3. Dicentra eximia Torr. One patch spreading in a wood below the High Rocks, W. Kent, v.-c. 16, 1933-34, J. P. M. Brenan.

32/5. Fumaria Boraei Jord. La Corbière, Jersey, Mrs Macalister Hall; Rocquaine Bay, Jersey, H. Phillips. Det. H. W. Pugsley.

*32/6. Fumaria muralis Sond. Hope, near Salcombe, S. Devon, v.-c. 3, H. W. Pugsley.

*32/8. Fumaria Martinii Clav. Allotment, Salcombe, S. Devon, v.-c. 3, H. W. Pugsley.

32/13c. Fumaria parviflora Lam., var. Symei Pugsley. Cherry Hinton, Cambs, v.-c. 29, H. Phillips. Det. H. W. Pugsley. Add " S " to *Comital Flora* but not N.C.R.

†33/4. Matthiola bicornis DC. Sand-dunes near Burnham, N. Somerset, v.-c. 6, J. P. M. Brenan.

36/3e. Barbarea vulgaris R. Br., var. **silvestris** Fries. West Cove, Co. Kerry, det. C. E. Britton, J. Chapple.

†36/5. Barbarea intermedia Boreau. Tonbridge, W. Kent, v.-c. 16; yard near Cheddar Station, N. Somerset, v.-c. 6, J. P. M. Brenan.

*37/2b. Arabis Brownii Jord., var. hispida Syme. E. of Foynes, Limerick, v.-c. H. 8, N. D. Simpson.

*44/3. Erophila praecox (Stev.) DC. Stoborough Heath, Dorset, v.-c. 9, N. D. Simpson.

49/6b. Sisymbrium officinale (L.) Scop., var. leiocarpum DC. Avon Bank N. of the Aqueduct, near Monkton Combe, N. Wilts, v.-c. 7; two spots at Tonbridge, W. Kent, v.-c. 16, J. P. M. Brenan.

†51/1. Erysimum orientale R. Br. Cornfield between Tilford and Frensham, Surrey, J. G. Lawn.

†61/3. Lepidium Draba L. Recently found in *Kintyre, v.-c. 101, L. McInnes; also on railway bank, New Swindon, *N. Wilts, v.-c. 7, † Donald Grose.

*61/5. Lepidium campestre Br. Wayside, Minto, Roxburgh, v.-c. 80, Miss P. Leake.

†61/8. Lepidium perfoliatum L. Waste ground, Ipswich docks, v.-c. 25, Miss E. Rawlins.

†61/24. Lepidium neglectum Thell. Sandy roadside between Hythe and Dymchurch, E. Kent, v.-c. 15, J. P. M. Brenan.

64/3. Thlaspi alpestre L. A few plants seen in Caenlochan Glen, Angus, v.-c. 90, July 1935, E. C. Wallace.

*66/1. Teesdalia nudicaulis (L.) Br. One plant only, Kintyre, v.-c. 101, L. McInnes.

†71(2)/1. **Succowia balearica** Medik. Garden casual, Bristol, W. Gloucester, v.-c. 34, May 1935. Distribution, Western Mediterranean region, H. J. Gibbons.

†79/1. Erucaria hispanica (L.) Dr. Avonmouth Docks, W. Gloster, v.-c. 34, Mrs Sandwith and J. P. M. Brenan.

†84/1. Gynandropsis gynandra (L.) Briquet (G. pentaphylla DC.). Ashton Gate, Bristol, Somerset, v.-c. 6, September 1935, C. I. Sandwith and J. P. M. Brenan.

88/3. Viola silvestris Lam. An unusual form was received from Miss Miller from Churchill, N. Somerset, v.-c. 6; this had the lower petal pale with the usual purple patch replaced by white; possibly the var. *lilacina* Celak. P. M. Hall.

88/4. Viola Riviniana Reichb., f. rosea. Netton Cleave, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall; Brighstone Down, Isle of Wight, v.-c. 10, P. M. Hall.

88/6×4. Viola canina L. × Riviniana Reichb. Barton Mills, W. Suffolk, v.-c. 26, J. Chapple. Det. P. M. Hall.

88/6b. Viola canina L., var. ericetorum Reichb. Jevington, E. Sussex, v.-c. 14, Richards, comm. A. H. Wolley-Dod.

88/7. Viola lactea Sm. Wickham Common and Hayling Island, S. Hants, v.-c. 11, P. M. Hall; Jevington, E. Sussex, v.-c. 14. Richards, comm. A. H. Wolley-Dod.

88/9×8. Viola hirta L. × odorata L. Castle Frome, Herefordshire, v.-c. 36, F. M. Day: Utterby, N. Lincs, v.-c. 54. Miss C. B. Marsden. Det. P. M. Hall.

*88/14. Viola contempta Jord. Kingsteington, S. Devon, v.-c. 3, G. T. Fraser and Dr T. Stephenson.

Note.—All these pansies have been passed by Mrs Drabble and myself and we are agreed on them. I have kept back 2 or 3 records on which we do not quite agree.—P.M.H.

88/19. Viola Lejeunei Jord. Hennock, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall.

88/22. Viola agrestis Jord. *Upper Welland, near Malvern, Worcestershire, v.-c. 37, F. M. Day; Mathon, Herefordshire, v.-c. 36, F. M. Day.

88/23. Viola segetalis Jord. Hennock, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall.

88/24. Viola obtusifolia Jord. Near Goring, Oxfordshire, v.-c. 23, P. M. Hall and N. D. Simpson; allotments, Kenfig, Glamorganshire, v.-c. 41, P. M. Hall and W. A. Sledge; Hennock, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall; Broadsands, S. Devon, v.-c. 3, Dr T. Stephenson; Exmouth, S. Devon, v.-c. 3, Dr T. Stephenson.

88/26. Viola ruralis Boreau. Rocquaine Bay, Guernsey, det. Mrs E. Drabble, who says that the late Dr E. Drabble had a record from "Jersey," but this is the first record from Guernsey, and "S" needs to be added to the *Com. Fl.*, H. Phillips; Upham, S. Hants, v.-c. 11, P. M. Hall; Firle, E. Sussex, v.-c. 14, P. M. Hall and A. H. Wolley-Dod; Kingsley, N. Hants, v.-c. 12, P. M. Hall, N. D. Simpson, and E. C. Wallace; *Sharkham Point, Brixham, S. Devon, v.-c. 3, G. T. Fraser and Rev. T. Stephenson, comm. P. M. Hall.

88/27. Viola anglica Drabble. *Near Rake, W. Sussex, v.-c. 13, P. M. Hall, N. D. Simpson, and E. C. Wallace; Fleam Dyke, Cambridgeshire, v.-c. 29, H. Phillips; Netton Cleave, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall.

*88/28. Viola Deseglisei Jord. Hennock, S. Devon, v.-c. 3, G. T. Fraser, comm. P. M. Hall.

88/33. Viola lutea Huds. Minto Hills, Roxburgh, v.-c. 80, Miss P. Leake.

89/1b. Polygala serpyllifolium Hose, var. vincoides (Chodat) Dr. Pickwell Down, N. Devon, v.-c. 4, Dr F. R. E. Wright.

89/5×2. Polygala calcareum F. Sch. × vulgare L. Worth, Dorset, v.-c. 9. Removes ? from *Br. Pl. List*, N. D. Simpson.

96/3. Silene conica L. On Hartlebury Common, Worcester, v.-c. 37 (removes brackets in *Com. Fl.*), 35 plants were counted, R. C. Burges.

100/2. Cerastium arvense L. Roadside, Bagendon, E. Gloster, v.-c. 33, C. T. Amherst. Add to *Comital Flora*, but not N.C.R. See *Top. Bot.*

100/4. Cerastium arcticum Lange. Slochd Mhor, Ben Avon, Banff, v.-c. 94, E. C. Wallace.

100/6c. Cerastium viscosum L., var. corollinum Fenzl, sub.-var. elongatum Rouy. Banks of R. Ogmore, Merthyr Mawr, Glamorgan, v.-c. 41, E. Vachell.

105/4×3. Spergularia Bocconei (Soleir.) Steudel × S. salina Presl. A single plant gathered at Par Harbour, E. Cornwall, with both presumed parents appeared to belong to this hitherto unrecorded hybrid, J. E. Lousley. Mr Lousley says that a plant collected by Lady Davy in Jersey in 1935 is identical with the specimen he gathered at Par, Cornwall (see *Journ. Bot.*, 1934, 257), except that the flowers are more congested.

†107/1. Portulaca oleracea L. Forest Row, E. Sussex, v.-c. 14, established as a garden weed for several years, Miss M. Parsons.

†108/1. Claytonia sibirica L. Recently introduced and spreading, Waggoner's Wells, N. Hants, v.-c. 12. P. M. Hall and Lt.-Col. G. Watts.

†108/2. Claytonia perfoliata Donn. Barry Island, Glamorgan, v.-c. 41, Miles Thomas per E. Vachell; *sandy arable field, Rake, W. Sussex, v.-c. 13, P. M. Hall, N. D. Simpson, and E. C. Wallace.

109/2c. Montia chondrosperma Fenzl, var. rivularis Gmel. Ty Mawr, Cardiganshire, v.-c. 46. P. M. Hall and W. A. Sledge.

*111/1. Elatine Hydropiper L. Amberley Wild Brooks, W. Sussex, v.-c. 13, B. T. Lowne, comm. A. H. Wolley-Dod.

†115/2. Althaea hirsuta L. Broughton Wood. N. Lincs., v.-c. 54, F. T. Baker.

†116/8. Lavatera trimestris L. Broughton Wood, N. Lincs., v.-c. 54, F. T. Baker.

†118/3. **Sida rhombifolia** L. Olympia sidings. Selby, S.E. Yorks, v.-c. 61, W. A. Sledge. Det. Kew.

†120/1. Abutilon Theophrasti Med. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan.

*127/11. Geranium rotundifolium L. Broughton, S. Hants, v.-c. 11, Miss Salmon, comm. P. M. Hall.

128/3d. Erodium cicutarium L'Hérit., var. Lebelii (Jord.). Llyn Coron, Anglesey, v.-c. 52; Raven Point, Wexford, v.-c. H. 12, N. D. Simpson.

128/3e. Erodium cicutarium L'Hérit., var. neglectum (B. f. & S.). Christchurch, S. Hants, v.-c. 11, N. D. Simpson; sandy ground by the sea just S. of Dymchurch, E. Kent, v.-c. 15, J. P. M. Brenan.

†132/5 Oxalis corymbosa DC. L'Ancresse Common, Guernsey, H. Phillips.

†133/3. Impatiens parviflora DC. In four places at Tonbridge, W. Kent, v.-c. 16, J. P. M. Brenan.

†135(2)/1. **Ailanthus altissima** (Mill.) Swingle. A young plant or two on the river-wall by the Thames between Kew and Mortlake, v.-c. 17, R. N. Parker and J. P. M. Brenan.

†140/1. Vitis vinifera L. Scattered along the river-wall between Kew and Mortlake, and climbing over willows, Surrey, v.-c. 17. The leaves of this species are very variable in their form and clothing. In this station all the plants had the leaves very deeply 5-lobed, the lobes overlapping at the top and coarsely lobate and dentate, but with deep open U-shaped sinuses between. The leaves were quite glabrous, except for some very slight floccosity and very short hairs on the primary nerves beneath, and at the point of their convergence at the base of the lamina, R. N. Parker and J. P. M. Brenan.

†*154/4. Melilotus indica (L.) All. (parviflora Desf.). Shoreham, W. Sussex, v.-c. 13, a small quantity in one spot, L. A. W. Burder.

†155/6. Trifolium stellatum L. Shoreham, W. Sussex, v.-c. 13. The result of an attempt to increase its distribution artificially by means of garden-raised seed has been carefully watched for some years, but it appears to be quite abortive, L. A. W. Burder.

*155/9. Trifolium Bocconei Savi. Jersey, specimen sent to Secretary, Lady Davy. New to Channel Islands.

*155/18. Trifolium suffocatum L. Icklingham, W. Suffolk, v.-c. 26, Lady Davy.

†155/32. Trifolium constantinopolitanum Sér. Tip, Bristol, West Gloucester, v.-c. 34, June 1935, C. I. and N. Y. Sandwith.

160/8. Lotus angustissimus L. Near Wonersh, Surrey, v.-c. 17, H. W. Pugsley, Lt.-Col. G. Watts and A. L. Still.

†170/1. Coronilla varia L. Grassy bank outside Woolwich Arsenal towards Erith, in plenty, September 1933, W. Kent, v.-c. 16, J. P. M. Brenan.

176/4. Vicia Orobus DC. Very abundant about Ty Mawr, Cardiganshire, v.-c. 46, even persistent as a weed of arable land, P. M.

Hall and W. A. Sledge; rocky path below Cader Idris, Merioneth, v.-c. 48, Hon. Mr Justice Talbot.

†176/5. Vicia villosa Roth. Wyberton and Foss-bank, Lincoln, v.-c. 53, S. J. Hurst and F. T. Baker.

176/14. Vicia lathyroides L. Sandy arable field near Rake, W. Sussex, v.-c. 13. An inland locality in the extreme north-west corner of the county, P. M. Hall, N. D. Simpson, and E. C. Wallace.

†176/25. Vicia narbonensis L. Broughton Wood, N. Lincs, v.-c. 54, F. T. Baker.

†176/28. Vicia grandiflora Scop. Casual, Avonmouth Docks, West Gloucester, v.-c. 34, October 1934, H. J. Gibbons.

†*178/7. Lathyrus hirsutus L. Wyberton, S. Lincs, v.-c. 53, S. J. Hurst.

†178/18. Lathyrus Cicera L. Railway-side between the Quenvais race-course and Blanches Banques station, Jersey, Mrs Macalister Hall.

183/4 Prunus Cerasus L. Near Marlborough, N. Wilts, v.-c. 7, J. D. Grose and P. M. Hall; Pyecombe, Sussex, v.cs. 13 and 14, P. M. Hall.

*185/34. Rubus chlorothyrsus Focke. Maam Bridge, W. Galway, v.-c. H. 16, new to Ireland, N. D. Simpson.

185/36b. Rubus atrocaulis P.J.M., var. calvatus (Blox.). South Haven, Dorset, v.-c. 9, A. H. Evans and N. D. Simpson.

185/38×47. **Rubus laciniatus** Willd. × **ulmifolius** Schott. Salcombe, S. Devon, v.-c. 3, addition to *Br. Pl. List*, N. D. Simpson.

185/45. Rubus Winteri P.J.M. Wareham to Bere Road, Dorset, v.-c. 9, A. H. Evans and N. D. Simpson.

185/49(2). Rubus curvispinus W. Wats. Between Highcliff and Milton, S. Hants, v.-c. 11, A. H. Evans and N. D. Simpson.

*185/84. Rubus apiculatus W. & N. Lough Corrib, between Cong and Headford, East Mayo, v.-c. H. 26, N. D. Simpson.

185/84c. Rubus anglosaxonicus Gel., sub-sp. setulosus Rogers. In shade, Cranham, E. Gloster, v.-c. 33; near Tintern, Monmouth, v.-c. 35, J. Chapple. Det. H. J. Riddelsdell.

185/95. Rubus cenomanensis Sudre, var. Newbouldii Rogers. Bangor, Caernarvon, v.-c. 49, N. D. Simpson.

185/104. Rubus Lejeunei W. & N., var. cuneatus (Rog. & Ley). South Haven, Dorset, v.-c. 9, A. H. Evans and N. D. Simpson.

185/110c. Rubus fuscus W. & N., var. hyposericeus Sudre. Bangor, Caernarvon, v.-c. 49, N. D. Simpson.

185/122c. Rubus rosaceus W. & N., var. scabripes (Génév.) Sudre. Breamore Wood, S. Hants, v.-c. 11, A. H. Evans and N. D. Simpson; *Glengarrif, West Cork, v.-c. H. 3, N. D. Simpson.

†185/159. Rubus phoenicolasius Maxim. Worthing, W. Sussex, v.-c. 13, an alien Rubus (Japan) growing about two feet in height, L. A. W. Burder.

†189/11. Potentilla norvegica L. Near Twerton Wood House, Bath, N. Somerset, v.-c. 6; railway bank, Cuxton, W. Kent, v.-c. 16, J. P. M. Brenan; *Weymouth railway yards, Dorset, v.-c. 9, N. D. Simpson.

190/9. Alchemilla acutidens Buser. Rocks, High Cup Nick, Westmorland, v.-c. 69, July 1934, A. H. G. Alston, C. I. and N. Y. Sandwith; rock ledge on Ingleborough, M.W. Yorks, v.-c. 64, June 1935 (also seen in Herb. Sledge as *A. fissa* Buser, det. Jaquet), A. J. Wilmott.

191/2. Agrimonia odorata (Gouan) Mill. Milland, W. Sussex, v.-c. 13, P. M. Hall.

†*195/9. Sorbus intermedia (Ehrh.) Pers. Several trees, appearing perfectly native, on a limestone scar near Austwick, M.W. Yorks, v.-c. 64, July 1934. Since recorded from another locality near Stainforth, C. I. and N. Y. Sandwith.

†195/14. Sorbus latifolia Pers. A form of this species resembling the Burgh Heath, Surrey tree is planted in copse near Riplington, West Meon, S. Hants, v.-c. 11, P. M. Hall and E. C. Wallace

196/2b. Crataegus oxyacanthoides Thuill., var. eriocalyx (Freyn) Dr. Shipbourne Common, W. Kent, v.-c. 16, J. P. M. Brenan.

†*197/3. Cotoneaster Simonsii Baker. One small plant at Oldbury Camp, near Igtham, W. Kent, v.-c. 16, J. P. M. Brenan.

199/24(2). **Saxifraga spathularis** Brot. (S. umbrosa auct.). The known range of this species has been extended by the discovery of two stations in Wicklow, R. L. Praeger.

†200/1. Tellima grandiflora R. Br. Appeared for the first time in uncultivated ground near Ripley Castle, Harrogate, M.W. Yorks, Lady A. D. Ingilby. Det. Kew.

203/1. Chrysosplenium alternifolium L. Near Ampfield, S. Hants, v.-c. 11, H. T. White, very rare in Hampshire and only the second recorded station in S. Hants, comm. P. M. Hall; between Selham and S. Ambersham, W. Sussex, v.-c. 13, confirmation of the locality from which it was first recorded for the vice-county in 1911, P. M. Hall and E. C. Wallace.

*217/5. Callitriche intermedia Hoffm. The Mares, Braunton, N. Devon, v.-c. 4, W. H. Pearsall and Dr F. R. E. Wright.

Epilobium all named by G. M. Ash.

220/4. Epilobium parviflorum Schreber. Waggoner's Wells, N. Hants, v.-c. 12, P. M. Hall.

*220/6. Epilobium Lamyi F. Sch. Near Cardiff, Glamorgan, v.-c. 41. Mr G. M. Ash refers this plant to f. *minor*, E. Vachell.

220/7. Epilobium obscurum Schreber. South Haven Peninsula, Dorset, v.-c. 9, P. M. Hall; Waggoner's Wells, N. Hants, v.-c. 12, P. M. Hall.

220/7(2). Epilobium adenocaulon Hausskn. *Petersfield Heath Pond, S. Hants, v.-c. 11, R. W. Butcher and P. M. Hall; Waggoner's Wells, N. Hants, v.-c. 12, R. W. Butcher and P. M. Hall; Amberley Wild Brooks, W. Sussex, v.-c. 13, G. M. Ash and P. M. Hall.

220/7(2)×7. Epilobium adenocaulon Hausskn. × obscurum Schreb. Roadside ditch, Torrington, N. Devon, v.-c. 4, September 1935, sp. in Hb. Druce, J. Chapple, Lady Davy, and Miss C. Rob. Although *E. adenocaulon* has not been recorded from Devon—and nowhere nearer than W. Gloster in 1920—G. M. Ash is confident that the above name is correct. It awaits to be seen if *adenocaulon* can be found in N. Devon; Waggoner's Wells, N. Hants, v.-c. 12, P. M. Hall.

220/9. Epilobium lanceolatum Seb. & Maur. Hillside above Wotton-under-Edge, towards North Nibley, W. Gloster, v.-c. 34; top of River Hill near Sevenoaks, W. Kent, v.-c. 16, J. P. M. Brenan.

220/10. Epilobium montanum L. Garden weed, Fareham, S. Hants, v.-c. 11, P. M. Hall; Waggoner's Wells, N. Hants, v.-c. 12, P. M. Hall.

220/10×4. Epilobium montanum L. × parviflorum Schreb. Lambridge Wood, Henley, Oxon, v.-c. 23, G. M. Ash with J. Chapple.

220/10×7. Epilobium montanum L. × obscurum Schreb. Waggoner's Wells, N. Hants, v.-c. 12, P. M. Hall.

220/10×8. Epilobium montanum L. × roseum Schreb. Garden weed, Fareham, S. Hants, v.c. 11, P. M. Hall.

†223/4. Oenothera muricata L. Waste-field, Henley-on-Thames, Oxon, v.-c. 23, J. Chapple. Det. C. E. Britton.

†230/1. Citrullus vulgaris L. Waste ground, Ashton Gate, Bristol, North Somerset, v.-c. 6, 1934, C. I. and N. Y. Sandwith.

†244/2. **Smyrnium perfoliatum** Mill. Burton's Court, Chelsea, London. First noticed in 1932, and has well maintained itself ever since, Hon. Mr Justice Talbot.

247/6. Apium Moorei Dr. Has proved to be well distributed in Ireland, having been recorded from 16 v.-cs., R. L. Praeger.

†250/6. Carum aromaticum (L.) Druce. (C. copticum Bth. & Hk.). Avonmouth Docks, West Gloucester, v.-c. 34, September 1935, C. I. Sandwith and H. J. Gibbons.

*255/1. Pimpinella major Huds. South Cadbury, S. Somerset, v.-c. 5. This plant was seen and sketched in 1903 by A. L. Still. Again seen and collected in 1935, A. L. Still and N. D. Simpson.

255/1b. Pimpinella major Huds., var. dissecta Dr. Brockhampton, E. Gloster, v.-c. 33, Miss L. Abell.

266/1. Aethusa Cynapium L., b. agrestis Wallr. St Fagans, Glamorgan, v.-c. 41, E. Vachell.

277/2. Heracleum Sphondylium L., var. angustifolium Huds. Sapperton, E. Gloucester, v.-c. 33, E. C. Wallace.

†279/1. Coriandrum sativum L. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan; Weymouth, Dorset, v.-c. 9, N. D. Simpson.

†282/6. Orlaya grandiflora (L.) Scop. Casual at Wapping Wharf, Bristol Harbour, W. Gloucester, v.-c. 34, July 1935, H. J. Gibbons.

†283/8. Turgenia latifolia (L.) Hoffm. Wapping Wharf, Bristol Harbour, West Gloucester, v.-c. 34, June 1935, H. J. Gibbons.

†287/1. Sambucus racemosa L. Woodland near Shipbourne and Southborough, W. Kent, v.-c. 16, J. P. M. Brenan.

287/2b. Sambucus nigra L., var. laciniata L. Seaford, E. Sussex, v.-c. 14, one bush among others of normal type, L. A. W. Burder.

†292/1. Leycesteria formosa Wallich. An escape becoming naturalised in a willow patch at Fishguard, Pembrokeshire, v.-c. 45, N. D. Simpson.

†294(2)/1. **Borreria verticillata** L. Olympia sidings, Selby, S.E. Yorks, v.-c. 61, W. A. Sledge. Det. Kew.

*296/5. Galium pumilum Murray. In chalk pasture on the downs above Folkestone, East Kent, v.-c. 15, June 1935, E. Milne-Redhead, N. Y. Sandwith, and V. S. Summerhayes.

*296/13. Galium anglicum Hudson. Old Basing, near Basingstoke, N. Hants, v.-c. 12, Mrs Lang and Miss Webster. Det. W.H.P.

†301/4. Valeriana pyrenaica L. Brentor, near Dartmoor, S. Devon, v.-c. 3, Miss P. M. Pearsall.

*304/2. Valerianella eriocarpa Desv. Limestone pasture above Cheddar, N. Somerset, v.-c. 6, June 30th, 1935, C. I. and N. Y. Sandwith and H. W. Pugsley; *near Northleach, E. Gloster, v.-c. 33, E. Vachell.

304/3b. Valerianella dentata (L.) Poll., var. mixta (L.). Elsfield, Oxon, v.-c. 23, J. Chapple.

304/4. Valerianella carinata Loisel. Shingle beach at Kingsdown, E. Kent, v.-c. 15, J. P. M. Brenan.

306/2. Dipsacus pilosus L. Glenham, E. Suffolk, v.-c. 25, Miss L. Abell.

†308/2b. Scabiosa maritima L., var. atropurpurea L. Abundant on a railway bank at Dumpton, E. Kent, v.-c. 15, Dr A. R. M. Brenan.

†319/2. **Aster (Felicia) petiolatus** Harv. A native of S. Africa. Well established in a wild state beside the Thames at Abingdon, Berks, v.-c. 22, growing between the stones of the wall forming the Berkshire bank of the river, S. Allen Warner. Det. Kew.

*333/5. Inula crithmoides L. Grain, West Kent, v.-c. 16, E. C. Wallace.

†333/8. Inula graveolens L. Waste ground, Ashton Gate, Bristol, v.-c. 6, November 1934, C. I. Sandwith.

†341(2)/1. Siegesbeckia orientalis L. Poultry run near Fleet, N. Hants, v.-c. 12, G. Watts; Olympia sidings, Selby, S.E. Yorks, v.-c. 61, W. A. Sledge. See *Rep. B.E.C.*, 617, 1928, and 130, 1932, for previous record.

†345/1. Rudbeckia laciniata L. Sand-pit by the road between Stone Street and Ivy Hatch, near Wrotham, W. Kent, v.-c. 16, J. P. M. Brenan.

353/1b. Bidens cernua L., var. radiata DC. Renvyle, W. Galway, v.-c. H. 16, N. D. Simpson.

†356/4. Hemizonia Fitchii A. Gray. Railway bank, Bristol, W. Gloucester, v.-c. 34, October 1934, C. I. Sandwith.

†*383/7. Senecio squalidus L. Broughton Wood, N. Lincs, v.-c. 54, F. T. Baker.

†*383/7d. Senecio squalidus L., var. leiocarpus Dr. Waste ground, Bath, N. Somerset, v.-c. 6, J. P. M. Brenan.

383/10e. Senecio vulgaris L., var. radiatus Koch. Near Chester, Cheshire, v.-c. 58, and apparently spreading, Hon. Justice Talbot.

†383/26. Senecio Smithii DC. Appeared some years ago at the S. end of Kintyre, v.-c. 101, where it still survives. This year found 20 miles further north, L. McInnes.

†383/31. Senecio Cineraria DC. Shingle beach at Kingsdown, E. Kent, v.-c. 15; roadside near Widemouth, E. Cornwall, v.-c. 2, J. P. M. Brenan.

†395/8. Carduus leiophyllus Petrov. A native of the Balkan States which may be distinguished from the rather similar *C. macrophyllus* Desf. by the glabrous leaves and the phyllaries which terminate in a shorter mucro. Waste-heap, Welwyn, Herts, 1934. H. Phillips.

396/4×2. **Cirsium acaule** (L.) Weber × **lanceolatum** Scop. Pasture near Marshfield, W. Gloster, v.-c. 34, J. P. M. Brenan.

396/4×6. Cirsium acaule (L.) Weber × tuberosum = Fraserianum Dr. Monknash, Glamorgan, v.-c. 41, new to this county. *C. acaule* (L.) Weber and *C. tuberosum* L. both grew near. A good range of hybrids could be traced. The best clumps grew massed together like *C. acaule*. They have the roots, smoother stems and bright colouring of *C. acaule* and the large leaves, globular heads, darker colouring and height of *C. tuberosum*, G. L. Bruce per E. Vachell.

396/5. Cirsium pratense (Huds.) DC. Very sparingly at Ty Mawr, Cardiganshire, v.-c. 46, rare in the county, P. M. Hall and W. A. Sledge.

†399/1. Silybum Marianum Gaertn. Ballast heap in Tonbridge goods-yard, W. Kent, v.-c. 16, J. P. M. Brenan. Add to *Comital Flora*.

402/1c. Serratula tinctoria L., var. integrifolia Koch. Avebury Camp, N. Wilts, v.-c. 7, J. P. M. Brenan.

405/11. Centaurea nemoralis Jord. *Rievaulx, N.E. Yorks, v.-c. 62, H. Phillips; *Killean, Kintyre, v.-c. 101, Mrs Macalister Hall.

405/12. Centaurea Cyanus L. One large plant with rose-coloured rays; half mile from any house, near Sturdy's Castle, Oxon, v.-c. 23, J. Chapple.

†405/14. Centaurea paniculata L. Avonmouth Docks, West Gloucester, v.-c. 34, October 1934, C. I. Sandwith.

†405/32. Centaurea melitensis L. Docks, Felixstowe, E. Suffolk, v.-c. 25, Miss E. Rawlins.

†407/3. Carthamus tinctorius L. Hove, Sussex, v.-c. 14, seven plants in all, Miss Pickard and L. A. W. Burder.

†419/8. Hieracium aurantiacum L. Marston Green, Warwickshire, v.-c. 38, Leslie T. Adams.

†425/9. Lactuca tatarica C.A.M. Waste ground, Felixstowe, E. Suffolk, v.-c. 25, coll. Miss J. Eldridge, comm. H. N. Dixon.

†428/1. Tragopogon porrifolius L. Grays, S. Essex, v.-c. 18, P. H. Cooke.

†*435/8. Campanula patula L. Waste ground, near docks, Ipswich, E. Suffolk, v.-c. 25, Miss E. Rawlins.

†436/2. Legousia Speculum-Veneris (L.) Fisch. Tip, Bristol, W. Gloucester, v.-c. 34, June 1935, C. I. and N. Y. Sandwith.

439/1. Oxycoccus quadripetalus Gilib. At over 2500 feet, Corrie Etchachan, Ben Macdhui, S. Aberdeen, v.-c. 92, E. C. Wallace; Crinan Moss, Kintyre, v.-c. 101, Mrs Macalister Hall.

440/1. Arbutus Unedo L. Has been found unquestionably native in Sligo, 160 miles north of Killarney, which was previously the most northerly locality known, R. L. Praeger.

456/1. Monotropa Hypopitys L. Elham Valley, E. Kent, v.-c. 15, 1934; near Cirencester, E. Gloster, v.-c. 33, 1935, Miss L. Abell.

467/1. Anagallis tenella Murr. Castleward, near Douglas, Isle of Man, v.-c. 71, all flowers having six petals, W. S. Cowin.

467/2c. Anagallis arvensis L., var. verticillata Diard. Splott, Glamorgan, v.-c. 41, E. Vachell.

468/1. Centunculus minimus L. Alderbury Common, near Salisbury, S. Wilts, v.-c. 8, Miss B. Gullick.

478/4. Centaurium pulchellum (Fr.) Hayek. Vann Lane, Chiddingfold, Surrey, v.-c. 17, A. L. Still.

480/4×8. Gentiana Amarella L. × germanica Willd. (Pamplinii Dr.). One plant, Chinnor, Oxon, v.-c. 23, E. C. Wallace.

*480/9b. Gentiana baltica Murb. Dogs Bay, Roundstone, W. Galway, v.-c. H. 16, N. D. Simpson.

†*486/1. Polemonium caeruleum L. By the shores of Loch Tay, Kenmore, Mid-Perth, v.-c. 88, but doubtless of garden origin, J. Chapple.

†494/1. Asperugo procumbens L. By a pond between Dymchurch and New Romney, E. Kent, v.-c. 15, J. P. M. Brenan.

†497/3. Symphytum orientale L. Worthing, W. Sussex, v.-c. 13, well established and in some quantity, second Sussex record, L. A. W. Burder. Det. Kew.

†497/9. Symphytum grandiflorum DC. Clapgate, Wimborne, Dorset, v.-c. 9, Miss B. Gullick, comm. N. D. Simpson.

†499/1. Trachystemon orientale D. Don. Shoreham, W. Kent, v.-c. 16, found in full flower at the end of March by Mrs R. A. L. Cole, L. A. W. Burder. Det. Kew.

506/10b. Myosotis versicolor Sm., var. lutea DC. Loch Coron, Anglesey, v.-c. 52, E. Vachell.

509/2. Echium plantagineum L. Polperro, E. Cornwall, v.-c. 2, J. G. Lawn.

511/1b. Volvulus sepium Medik., var. coloratus Lange. Entrance to Angley Wood at Cranbrook, E. Kent, v.-c. 15, J. P. M. Brenan.

†512/2. **Ipomaea hederacea** Jacq. Olympia sidings, Selby, S.E. Yorks. v.-c. 61, W. A. Sledge. Det. Kew.

†512/3. **Ipomaea sibirica** Pers. Olympia sidings, Selby, S.E. Yorks, v.-c. 61, W. A. Sledge. Det. Kew.

†517/14. Solanum sisymbriifolium Lam. Olympia sidings, Selby, S.E. Yorks, v.-c. 61, W. A. Sledge.

†517/20. **Solanum gracile** Dunal. Barry Docks, Glamorgan, September 1935, temperate S. America, C. I. Sandwith and J. P. M. Brenan.

†518/7. Physalis peruviana L. Ashton Gate, Bristol, N. Somerset, v.-c. 6, October 1934, C. I. Sandwith.

†521/1. Atropa Belladonna L. Tip at Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan.

†522/1. Datura Stramonium L. Hillsley, W. Gloster, v.-c. 34, J. P. M. Brenan.

†524/5. **Hyoscyamus reticulatus** L. Native of the Orient, determined at Kew. Found at Broughton Wood, N. Lincs, v.-c. 54, in a clearing that had been recently replanted. Considerable quantities of pheasant food were brought here from Grimsby 30 years ago, and no doubt the seeds were introduced with this and have lain dormant until the recent soil disturbance has brought them to the surface and made germination possible. The native *H. niger* was in abundance on the same piece of ground, F. T. Baker.

†525/5. Nicotiana alata Link et Otto. Ashton Gate, Bristol, N. Somerset, v.-c. 6, September 1935, a form with purplish-blue corollas, C. I. Sandwith and J. P. M. Brenan.

†525/6. **Nicotiana longiflora** Cav. Casual, Wapping Wharf, Bristol Harbour, v.-c. 34, August 1935, temperate South America, H. J. Gibbons.

†527/15. Verbascum ovalifolium Sims. (V. pulchrum Vel.). Avonmouth Docks, W. Gloucester, v.-c. 34, November 1934, C. I. Sandwith.

†532/2. Linaria purpurea Mill. Chalky railway cutting between Walmer and Deal, E. Kent, v.-c. 15, J. P. M. Brenan.

†532/21. Linaria rubrifolia Rob. & Cast. Still on walls near W. Malling Abbey, W. Kent, v.-c. 16, one plant with white flowers tinged with green and paler foliage, J. P. M. Brenan.

532/24b. Linaria spuria (L.) Mill., var. peloria Dr. Among the type in a field by Pluck's Gutter, E. Kent, v.-c. 15, J. P. M. Brenan.

†535/1. Scrophularia vernalis L. In woods, Minto, Roxburgh, v.-c. 80, Miss P. Leake.

543/17(2). Veronica praecox All. Two specimens seen in a field near Kilverstone, W. Norfolk, v.-c. 28, 12th May 1935. Also found by Miss M. S. Campbell in great quantity between Barton Mills and Tuddenham, and reported to me (Miss E. M. Bass *in lit.*) as in quantity near Brandon, W. Suffolk, v.-c. 26, A. J. Wilmott.

543/19. Veronica agrestis L., f. rosea Fournier. Garden of Farington House, Leyland, S. Lancs, v.-c. 59, H. E. Bunker.

543/20. Veronica polita Fries. Roadside between Bathford and Limpley Stoke, N. Somerset, v.-c. 6, J. P. M. Brenan. Very luxuriant specimens of the f. *calycida* Abromeit & Scholz.

†543/34. Veronica Crista-galli Stev. Roadside near Bathford, N. Somerset, v.-c. 6, J. P. M. Brenan.

†543/41. Veronica filiformis Sm. Garden outcast, Kingsley, N. Hants, v.-c. 12, P. M. Hall, N. D. Simpson, and E. C. Wallace.

545/3. Euphrasia brevipila Burnat et Gremli. Ty Mawr, Cardiganshire, v.-e. 46, P. M. Hall and W. A. Sledge. Det. H. W. Pugsley.

545/5d. Euphrasia nemorosa Pers., var. collina Pugl. Cronkley Pastures, N.W. Yorks, v.-c. 65, H. Phillips. Det. H. W. Pugsley.

545/10. Euphrasia occidentalis Wettst. Ynys Las, near Borth, Cardiganshire, v.-e. 46, P. M. Hall and W. A. Sledge. Det. H. W. Pugsley.

545/15. Euphrasia micrantha Rchb. Cautley Spout, N.W. Yorks, v.-c. 65, H. Phillips. Det. H. W. Pugsley.

*545/16. Euphrasia scotica Wettst. Near Austwiek Moor, Mid-west Yorks, v.-c. 64, H. Phillips; Ty Mawr, Cardiganshire, v.-e. 46, P. M. Hall and W. A. Sledge. Both det. H. W. Pugsley.

545/18. Euphrasia confusa Pugsley, f. albida. Caswell Bay, Gower, Glamorgan, v.-c. 41; *Hawnby and near Rievaulx, N.E. Yorks, v.-e. 62, H. Phillips. Det. H. W. Pugsley.

545/19c. Euphrasia Rostkoviana Hayne., var. obscura Pugsl. Ty Mawr, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge. Det. H. W. Pugsley.

*545/19c. Euphrasia Rostkoviana Hayne, probably var. obscura Pugsl., teste ipso. Selkirkshire, v.-e. 79, first record for Scotland, E. O. Callen in *Journ. Bot.*, lxxiii, 53.

545/19(2). Euphrasia pseudo-Kerneri Pugsley. Downs above Upper Malling, W. Kent, v.-e. 16, J. P. M. Brenan.

*545/19(4). Euphrasia anglica Pugsl. Near Verwood, R. D.'O. Good; near Littlesea, P. M. Hall, both Dorset, v.-c. 9. Det. H. W. Pugsley.

*548/5. Rhinanthus stenophyllus Schur. Kinvarra, S.E. Galway, v.-c. H. 15, N. D. Simpson.

549/4e. Melampyrum pratense L., var. vulgatum (Pers.) Beek., sub-var. laurifolium Beauv. Milton-Hordle road, S. Hants, v.-c. 11, N. D. Simpson.

549/4j. Melampyrum pratense L., var. hians Dr., f. platyphyllum Beauv. Above Loch Dromineer, Glenear, S. Kerry, v.-c. H. 1, N. D. Simpson.

551/1. Lathraea Squamaria L. Upon Hazel, Minto, Roxburgh, v.-c. 80, Miss P. Leake.

553/4. Pinguicula lusitanica L. Near Aldershot, N. Hants, v.-c. 12, Lt.-Col. G. Watts. Although recorded from this locality in B.E.C. 1919 Rep., 671 (1920), neither *Comital Flora* nor *Top.* Bot. 2nd Supplement gives this species for N. Hants. This is the most easterly station recorded in Britain; prior to this Purbrook Common, S. Hants (just N. of Portsmouth) held this position. The plant is to be looked for in S.W. Surrey, P. M. Hall.

558/1. Mentha rotundifolia Huds. By the Avon, Aveton, Gifford, S. Devon, v.-c. 3, N. D. Simpson and A. L. Still.

558/3. Mentha longifolia Huds. Stream side near St Columb Minor, W. Cornwall, v.-c. 1, a form with rather broad leaves and small spikes, perhaps a hybrid, N. D. Simpson and A. L. Still.

558/3×1. Mentha longifolia (L.) Huds. × rotundifolia (L.) Huds. = × M. niliaca Jacq., var. villosa Huds. Hicks Mill, Bissoe, W. Cornwall, v.-c. 1, N. D. Simpson and A. L. Still.

558/4. Mentha spicata Huds. By the Dart, Buckfastleigh, S. Devon, v.-c. 3, N. D. Simpson and A. L. Still; Llanmadoc, Gower, Glamorgan, v.-c. 41, A. L. Still; rubbish tip near Pickersleigh, Worcs, v.-c. 37, F. M. Day.

558/6a. Mentha piperita L., var. **officinalis** Sole. Ewhurst, Surrey, v.-c. 17, A. L. Still.

558/6e. ×Mentha citrata Ehrh. Tresadderne Farm, Lizard, W. Cornwall, v.-c. 1, N. D. Simpson and A. L. Still.

558/7c. Mentha aquatica L., var. Lobeliana Beck. Vann Lane, Chiddingfold, Surrey, v.-c. 17, A. L. Still.

558/7×12. Mentha aquatica L. × rubra Sm. In *Fl. Herts* as *M. citrata* Ehrh. (Coleman, 1843). Det., as probably *rubra* × *citrata*, by J. Fraser from a sheet in Hb. Druce. Roydon, Herts, v.-c. 20, A. L. Still: canal, Exeter, S. Devon, v.-c. 3, Rev. T. Stephenson; probably this by the Avon, Aveton Gifford, S. Devon, v.-c. 3, A. L. Still and N. D. Simpson.

558/9. Mentha verticillata L., forma. Hartland Farm, King's Brompton, S. Somerset, v.-c. 5. The Rev. E. S. Marshall thought this might be a hybrid of *M. piperita* and *M. verticillata*. It is an unusual form, but might equally well be *piperita* × *arvensis*, as these two plants are growing close together, whereas the *M. verticillata* is rather remote, N. D. Simpson and A. L. Still.

558/9b. Mentha verticillata L., var. paludosa Sole. Braunton Burrows, N. Devon, v.-c. 4, F. M. Day.

558/9n. Mentha verticillata L., var. rubro-hirta Briq. Chyvagne, Perranarworthal, W. Cornwall, v.-c. 1, N. D. Simpson and A. L. Still; near Hillhead, Brixham, and a very robust terrestrial form at Upton Farm, Brixham, S. Devon, v.-c. 3, F. M. Day.

558/9p. Mentha verticillata L., var. trichodes Briq. A sheet in the Hiern Hb. appears to be this variety, but I have not been able to get fresh material for confirmation. Bish Mill, Bishop's Nympton, N. Devon, v.-c. 4, A. L. Still.

558/10. Mentha gentilis L. By the Dart, Buckfastleigh; by the Avon, Aveton Gifford, S. Devon, N. D. Simpson and A. L. Still.

558/10e. Mentha gentilis L., var. resinosa (Opiz) Briq. "Meavy, S. Devon" (the first record from Britain, Waterfall, 1877), still there, but very scarce, N. D. Simpson and A. L. Still; "by the Dart, Buckfastleigh, S. Devon" (sheet in Hb. Hiern, Exeter Museum), located by Miss K. Bray, collected by A. L. Still and N. D. Simpson.

*558/11. ×Mentha cardiaca Baker. Shapwick, Dorset, v.-c. 9, N. D. Simpson.

558/12. Mentha rubra Sm. Barnard's Green, Malvern, Worcs, v.-c. 37, F. M. Day.

558/13d. Mentha arvensis L., var. agrestis Sole. Hartland Farm, King's Brompton, S. Somerset, v.-c. 5, N. D. Simpson and A. L. Still.

561/1. Thymus pulegioides L. Old quarry near Twerton, Bath, N. Somerset, v.-c. 6. J. P. M. Brenan.

*561/10. Thymus neglectus Ronn. Black Head, Clare, v.-c. H. 9; *Raven Point, Wexford, v.-c. H. 12; *Kinvarra, S.E. Galway, v.-c. H. 15; *Dogs Bay, Roundstone, W. Galway, v.-c. H. 16, N. D. Simpson.

*†565/1. Melissa officinalis L. Outcast, Shapwick, Dorset, v.-c. 9, N. D. Simpson.

572/1×2. Scutellaria galericulata L. × minor Huds. Wood at the S.E. end of Broadwater Forest, Tunbridge Wells, E. Sussex, v.-c. 14; wood near Pembury Waterworks, W. Kent, v.-c. 16, very abundant, J. P. M. Brenan.

573/2. Prunella laciniata L. Thorndale, E. Gloster, v.-c. 33, Miss L. Abell; *Southern Cliffs of Alderney, Channel Islands, September 1932, R. A. F. Brenan; *Salisbury Plain between Bulford and Tidworth, S. Wilts, v.-c. 8, D. B. Fanshawe.

577/4. ×Stachys ambigua Sm. E. side of Broadwater Forest, Tunbridge Wells, E. Sussex, v.-c. 14, J. P. M. Brenan.

†577/12(3). **Stachys Ocymastrum** (L.) Briq. Better known as *S. hirta* L. Waste ground, Bristol, W. Gloucester, v.-c. 34, June 1935, Western Mediterranean region, C. I. and N. Y. Sandwith.

585(2)/1. Amethystea caerulea L. Olympia sidings, Selby, S.E. Yorks, v.-c. 61, W. A. Sledge. See *Rep. B.E.C.*, 279, 1930, for previous record.

*587/2. Ajuga pyramidalis L. Rosettes observed in 1931 above L. Maree, W. Ross, v.-c. 105; flowering June 1935, A. J. Wilmott and F. Druce.

†588/1. Plantago indica L. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan.

†596/6. Amaranthus retroflexus L. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan.

†596/11. Amaranthus Blitum L. Waste places about Bromley, W. Kent, v.-c. 16, F. R. Browning. Det. Kew.

600/1g. Chenopodium rubrum L., var. kochiiforme Murr. Dagenham, S. Essex, v.-c. 18. Mrs Sandwith kindly looked at the specimen and concurred in the identification. J. P. M. Brenan.

†600/11. Chenopodium leptophyllum (Nutt.) Britt. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan.

*†600/13. Chenopodium glaucum L. Near Hill House, Shotley, E. Suffolk, v.-c. 25, Ronald Burn: tip at High Brooms, W. Kent, v.-c. 16; *Newport Corporation Tip, Monmouth, v.-c. 35, J. P. M. Brenan: near Bidborough, W. Kent, v.-c. 16, J. E. Lousley.

†600/31(3). Chenopodium giganteum Don. (=C. amaranticolor Coste et Reynier). Avonmouth Docks, W. Gloucester, v.-c. 34, September 1934-35, C. I. Sandwith and H. J. Gibbons. Det. P. Aellen.

606/18. Atriplex pedunculata L. A few plants of this now very rare species were seen in East Anglia in October 1934, J. E. Lousley.

611/3. Salicornia dolichostachya Moss. Cuckmere Haven, E. Sussex, v.-c. 14, L. A. W. Burder.

615/5c. Polygonum amphibium L., var. glandulosum Schönheit. Loch Leven, Kinross, v.-c. 85, N. D. Simpson.

615/6 × 7. Polygonum Lapathifolium L. × Persicaria L. On mud dredged from Petersfield Heath Pond, S. Hants, v.-c. 11, P. M. Hall and E. C. Wallace. Det. C. E. Britton.

615/6e. Polygonum lapathifolium L., var. ruderale Schuster. Grangetown, Glamorgan, v.-c. 41, E. Vachell. Det. C. E. Britton.

615/6f. Polygonum lapathifolium L., var. tomentosum Beck. Splott, Cardiff, Glamorgan, v.-c. 41, E. Vachell. Det. C. E. Britton.

615/8b. Polygonum nodosum Pers., var. incrassatum Rouy, f. stenophyllum C. E. Britt. Canton Common, Glamorgan, v.-c. 41, E. Vachell. Det. C. E. Britton.

615/8d. Polygonum nodosum Pers., var. erectum Rouy. On mud dredged from Petersfield Heath Pond, S. Hants, v.-c. 11, P. M. Hall and E. C. Wallace; Grangetown, Glamorgan, v.-c. 41, E. Vachell. Both det. C. E. Britton.

615/9 × 11. Polygonum Hydropiper L. × minus Huds. Amberley Wild Brooks, W. Sussex, v.-c. 13, J. E. Lousley, P. M. Hall, and E. C. Wallace. Det. C. E. Britton.

615/11a. Polygonum minus Huds., var. commune A. Br. Amberley Wild Brooks, W Sussex, v.-c. 13, P. M. Hall. Det. C. E. Britton.

615/14m. Polygonum aviculare L., var. angustissimum Meisn. Near Cardiff, Glamorgan, v.-c. 41, E. Vachell. Det. C. E. Britton.

†615/31. Polygonum polystachyum Wallich. St John, Millbrook, E. Cornwall, v.-c. 2; recess, Galway road, W. Galway, v.-c. H. 16, N. D. Simpson.

†615/33. Polygonum sachalinense Schmidt. Milford-on-Sea, S. Hants, v.-c. 11, N. D. Simpson.

†618/3×29. Rumex crispus L. × obovatus Danser. ×**R. Bontei** Danser, *ex char., descr. et fig.* Avonmouth Docks, W. Gloucester, v.-c. 34, September 1928, C. I. and N. Y. Sandwith.

618/6×11. Rumex obtusifolius L. × R. pulcher L. Shalford Common, Surrey, and Alfriston, E. Sussex, v.-c. 14, J. E. Lousley.

618/9×13. Rumex conglomeratus L. × R. maritimus L. Binsey Common, Oxon, v.-c. 23, confirmed by Dr K. H. Rechinger, J. E. Lousley.

618/12. Rumex palustris Sm. Yiewsley, Middlesex, v.-c. 21, J. P. M. Brenan.

618/13. Rumex maritimus L. Dykes near Tripcock Ness, W. Kent, v.-c. 16, September 1933, J. P. M. Brenan.

625/1. Hippophae rhamnoides L. An enormous clump at the S. end of Pegwell Bay, E. Kent, v.-c. 15, J. P. M. Brenan.

†*628/10b. Euphorbia Esula L., var. pinifolia Dr. Marston Green, Warwickshire, v.-c. 38, growing on tip of ashes. Leslie T. Adams.

†*628/11. Euphorbia Cyparissias L. Near Andoversford, E. Gloster, v.-c. 33, very sparse and decreasing. Miss L. Abell.

†*628/16. Euphorbia Lathyris L. Avonmouth Docks, W. Gloster, v.-c. 34, J. P. M. Brenan.

†636/1. Ficus Carica L. Several bushes on the river-wall by the Thames between Kew and Mortlake, Surrey, v.-c. 17, R. N. Parker and J. P. Brenan.

642/3 × 2. Betula nana L. × pubescens Ehrh. Caenlochan Glen, Angus, v.-c. 90, E. C. Wallace.

†651/6. Populus Tacamahacca Mill. Sand-pit at Aylesford, E. Kent, v.-c. 15, J. P. M. Brenan.

*652/2. Empetrum hermaphroditum Hag. Several places about Braemar, S. Aberdeen, v.-c. 92. E. C. Wallace.

*658/1. Hydrilla verticillata Presl. Discovered in Ireland, August 1935, near Renvyle, Connemara. Vouching specimens have been sent to the National Museum, Dublin; the British Museum, and Kew. Dr. W. H. Pearsall.

668/2e. Epipactis latifolia All., var. purpurea Celak. Wood between Romford and Matfield, W. Kent, v.-c. 16, in deep shade with stem 80 cm. high and showing 55 flowers. W. H. Pearsall.

*669/1. Orchis purpurea Huds. Walter Belchamp Parish, N. Essex, v.-c. 19, Samuel Dale, 1738. Dale's specimen is in Herb. Mus. Brit. and in a biographical note on Dale in *Journ. Bot.*, 1883, 231, G. S. Boulger referred to it as *O. militaris* L., which is the authority given for the record of that species for v.-c. 19 in the first supplement of *Topographical Botany*. But the specimen is *O. purpurea* Huds., and the names cited on Dale's label are early synonyms for that species and not *O. militaris* L. There have been no other records of this species from Essex, P. M. Hall.

669/6. Orchis pardalina Pugsl. Lambriggan, near Perranporth, W. Cornwall, v.-c. 1, F. Rilstone, comm. P. M. Hall; Axmouth, S. Devon, v.-c. 3, Dr T. Stephenson; Titchfield, S. Hants, v.-c. 11, P. M. Hall; Easter Softlaw, near Kelso, Roxburghshire, v.-c. 80, W. Handyside, comm. P. M. Hall.

669/7. Orchis latifolia L., sec. Pugsley. (O. incarnata auct. non L.). Eckford, Roxburghshire, v.-c. 80, and Aberlady, Haddingtonshire, v.-c. 82, W. Handyside. Comm. P. M. Hall.

669/7c. Orchis latifolia L., var. pulchella (Dr.) Pugsl. Stoborough, Dorset, v.-c. 9, Dr T. Stephenson; near Strata Florida Station, Tregaron, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge.

669/7d. Orchis latifolia L., var. coccinea Pugsl. Kenfig, Glamorganshire, v.-c. 41; between Kidwelly and Pembrey, Carmarthenshire, v.-c. 44, P. M. Hall and W. A. Sledge.

669/7 × 9. Orchis latifolia L. × purpurella Steph. Near Borth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge.

669/8. Orchis praetermissa Dr. Marsh at edge of burrows between Kidwelly and Pembrey, Carmarthenshire, v.-c. 44, P. M. Hall and W. A. Sledge.

669/9. Orchis purpurella Stephenson. *Near Mentieth, W. Perth, v.-c. 87; *near Kirkmichael, E. Perth, v.-c. 89, J. F. G. Chapple; Ynys Las, near Borth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge; *Eckford and Melrose, Roxburghshire, v.-c. 80; Aberlady, Haddingtonshire, v.-c. 82; *Balerno and many localities in the Pentlands, Midlothian, v.-c. 83; *a form related to this species, Burntisland, Fifeshire, v.-c. 85, Wm. Handyside, comm. P. M. Hall; *Kinloch Rannoch, Mid Perthshire, v.-c. 88, J. F. G. Chapple, comm. P. M. Hall. *Note.*—In some of these northern counties this species may have been previously recorded under the name *O. praetermissa*, var. *pulchella*.—P.M.H.

669/9(2)b. Orchis majalis Reichb., var. occidentalis Pugsley. At present only known to occur in Ireland, has been recorded from Clare and Galway, R. L. Praeger; see also H. W. Pugsley in Abstracts.

669/10. Orchis maculata L. *Between Kidwelly and Pembrey, Carmarthenshire, v.-c. 44; Ty Mawr, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge; Balerno, etc., Midlothian, v.-c. 83, W. Handyside, comm. P. M. Hall; Kinloch Rannoch, Mid Perthshire, v.-c. 88, J. F. G. Chapple, comm. P. M. Hall; Ben Macdhui, altitude 3500 ft., S. Aberdeen, v.-c. 92, E. C. Wallace; *near Mentieth, W. Perth, v.-c. 87, J. F. G. Chapple.

669/10 × 9. Orchis maculata L. × purpurella Steph. Near Cwm Woods, Aberystwyth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge; Kinloch Rannoch, Mid Perthshire, v.-c. 88, J. F. G. Chapple, comm. P. M. Hall; near Mentieth, W. Perth, v.-c. 87, with both parents, J. F. G. Chapple.

669/11. Orchis Fuchsii Dr. Near Boughrood, Radnorshire, v.-c. 43, and Cwm Woods, Aberystwyth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge. (Add both v.-c.s to *Comital Flora* but previously

recorded in *List of Welsh Flowering Plants.*) *Eckford and Melrose, Roxburghshire, v.-c. 80; *Balerno, Midlothian, v.-c. 83; *Burntisland, Fifeshire, v.-c. 85, W. HANDYSIDE, comm. P. M. HALL; *Killean, Kintyre, v.-c. 101, Mrs MACALISTER HALL, comm. P. M. HALL; *Bridge of Cally, E. Perth, v.-c. 89, J. F. G. CHAPPLE.

669/11 × 9. ORCHIS FUCHSII Dr. × PURPURELLA Steph. Near Melrose, Roxburghshire, v.-c. 80; Coates, Balerno, etc., Midlothian, v.-c. 83, W. HANDYSIDE, comm. P. M. HALL.

*669/14. ORCHIS MASCULA L. On May 6th we came across a number of specimens growing on the Ayre itself, just at the back of the sand dunes at Rue Point. As *O. mascula* is stated to be in need of confirmation in C. F. Paton's *Flora of the Isle of Man*, specimens were sent to Mr W. H. Pearsall, who identified them as being undoubtedly *O. mascula* L., W. S. COWIN.

669/17. ANACAMPTIS PYRAMIDALIS (L.) Rich. *Between Kidwelly and Pembrey, Carmarthenshire, v.-c. 44; Ynys Las, near Borth, Cardiganshire, v.-c. 46, very scarce in the county, P. M. HALL and W. A. SLEDGE.

672/2. OPHRYS ARANIFERA Huds. Denbies, above Dorking, Surrey, v.-c. 17, removes ? in *Comital Flora* [v.v.s. W.H.P.], J. G. LAWN.

672/4. OPHRYS APIFERA Huds., var. TROLLII Heg. Rodborough Common near Stroud, E. Gloster, v.-c. 33, C. T. AMHERST.

674/1. GYMNADENIA CONOPSEA R. Br. Ty Mawr, Cardiganshire, v.-c. 46, P. M. HALL and W. A. SLEDGE. (Add to *Comital Flora* but not N.C.R.; see *Top. Bot.*, 2nd Supplement, and *List of Welsh Flowering Plants.*)

674/1 × 669/10. GYMNADENIA CONOPSEA R. Br. × ORCHIS MACULATA L. = ×× ORCHIGYMNADENIA SOUPPENSIS G. Camus. Ty Mawr, Cardiganshire, v.-c. 46, P. M. HALL and W. A. SLEDGE.

674/3. GYMNADENIA ALBIDA (L.) Rich. Ty Mawr, Cardiganshire, v.-c. 46, P. M. HALL and W. A. SLEDGE.

691/3. POLYGONATUM OFFICINALE All. Lineover, E. Gloster, v.-c. 33, Miss L. ABELL.

702/4c. ALLIUM VINEALE L., var. COMPACTUM Thuill. Thorndale, E. Gloster, v.-c. 33, Miss L. ABELL.

711/1. GAGEA LUTEA (L.) Ker-Gawler. Near Downton, S. Wilts, v.-c. 8, Miss GULLICK. An addition to *Comital Flora* but not a new record as the previously-recorded station at Wexcombe is in South Wilts and not in North Wilts as Druce supposed. The Downton station is

within a few feet of the boundary of South Hants, but does not actually cross it. Comm. P. M. Hall.

*716/1. Paris quadrifolia L. Scalpay Island, North Ebudes, v.-c. 104, Prof. J. W. Heslop Harrison.

718/14. Juncus compressus Jacq. Roadside, West Harnham, Salisbury, S. Wilts, v.-c. 8, Miss B. Gullick.

*718/18. Juncus pygmaeus Rich. Raasay Island, Hebrides, v.-c. 104, new to Scotland and a great northerly extension of its distribution, J. W. Heslop Harrison. Det. W. H. Pearsall (Spm. in Herb. Mus. Brit.).

718/20. Juncus castaneus Sm. Corrie Kander, S. Aberdeen, v.-c. 92, very tall, E. C. Wallace.

719/3. Luzula Forsteri Sm. Wood near Goring, Oxford, v.-c. 23, R. C. Burges.

719/7. Luzula arcuata Wahl. Summit of Ben Avon, S. Aberdeenshire, v.-c. 92, Lady D. Colquhoun; on the Banff side of Ben Avon, v.-c. 94, E. C. Wallace.

*723/1c. Arum italicum Mill., var. **neglectum** Towns. Scattered over the parish of Braunton, N. Devon, v.-c. 4, Dr F. R. E. Wright. Det. Kew.

*723/2. Arum maculatum L. Growing freely and fruiting, in a roadside hedge-bottom at Southend, 10 miles S. of Campbeltown, Kintyre, v.-c. 101, Latimer McInnes; Fintry, Stirling, v.-c. 86, Matthew M. Bird.

*728/1. Wolffia arrhiza (L.) Wimm. Sparingly in a pond by the railway one mile east of Marden, W. Kent, v.-c. 16, J. P. M. Brenan.

737/11e. ×Potamogeton nitens Weber, var. subgramineus (Raunk.) Hagstr. Canal, Woking, Surrey, v.-c. 17, Lt.-Col. G. Watts.

737/13b. ×Potamogeton lucens L., var. acuminatus (Schum.) Fries. Canal, Woking, Surrey, v.-c. 17, Lt.-Col. G. Watts.

737/16d. Potamogeton perfoliatus L., var. rotundifolius Wallr. Collected during the L.N.U. meeting at Revesby, N. Lincs, v.-c. 54, July 1935, F. T. Baker. Det. W. H. Pearsall.

737/19. Potamogeton acutifolius Link. Dyke between Appledore Station and the village, E. Kent, v.-c. 15, J. P. M. Brenan.

737/20. Potamogeton obtusifolius M. & K. Canal, Woking, Surrey, v.-c. 17, in fine fruiting condition, 27th September 1935, Lt.-Col. G. Watts.

737/22. Potamogeton Friesii Rupr. Canal, Woking, Surrey, v.-c. 17, Lt.-Col. G. Watts.

737/24. Potamogeton rutilus Wolfgang. Llyn Coron, Anglesey, v.-c. 52. First discovered here by J. Griffith in 1892 and still exists. Fresh leaves from this lake were gathered by Mrs Knowling and sent to me in July 1935. They were undoubtedly those of this species. W. H. Pearsall.

*738/1. Ruppia maritima L. Dyke near Long Bank, Kilnsea, S.E. Yorks, v.-c. 61, W. A. Sledge.

744/1. Cyperus longus L. Edge of pond, Holmwood Common, Surrey, v.-c. 17: origin unknown, only previous record for Surrey is Witley, where it is said to have been planted, H. N. Ridley in *Journ. Bot.*, lxxiii (1935), 362.

*745/2. Eleocharis uniglumis Schultes. In plenty, Horsey Marsh, Braunton, N. Devon, v.-c. 4, Dr F. R. Elliston Wright. Det. Wilmott. Baglan Marsh and by Ewenny River, Ogmore, Glamorgan, v.-c. 41, A. L. Still.

747(5). Eriophorum alpinum L. The area indicated by Prof. Fernald on sketch maps to both A. J. Wilmott and Miss E. Vachell has been thoroughly examined, first in 1931 by A. J. W. and F. Druce, as well as by a party of four persons from Edinburgh, including Sir W. Wright Smith and R. M. Adams, and again in 1935 by A. J. W. and F.D., with N. D. Simpson, Miss M. S. Campbell and Miss E. Vachell. Altogether some 33 man-hours have been spent on this restricted area without any trace of the species being seen, and until Prof. Fernald or someone else revisits the spot with success the record should be disregarded. A. J. Wilmott.

753/1. Carex pseudo-Cyperus L. Pinn's Green, Madresfield, Worcester, v.-c. 37, at the side of the main road between Worcester and Malvern. F. M. Day.

753/4. Carex vesicaria L. Bank of R. Teifi, above Tregaron, Cardiganshire, v.-c. 46. P. M. Hall and W. A. Sledge.

753/8. Carex lasiocarpa Ehrh. Wilverley Marsh, New Forest, S. Hants, v.-c. 11, J. G. Lawn.

753/9d. Carex hirta L., var. spinosa Mortensen. West Hoathly, E. Sussex, v.-c. 14, L. Palmer.

753/14. Carex capillaris L. Sparingly in boggy ground at top of cliffs at High Cup Nick, Westmorland, v.-c. 69, July 1934, A. H. G. Alston and N. Y. Sandwith. [Not a N.C.R., although omitted from the *Comit. Fl.* There are two previous records, "By the Maize Beek" (Teesdale), J. A. Martindale, specimen in the Martindale Hbm., Kendal Museum; and "Waitby near Kirkby Stephen," Miss Mason, specimen authenticated by Mr A. Wilson.—W.H.P.]

*753/30. Carex montana L. Cliffs, Carbis Bay, W. Cornwall, v.-c. 1. The record for E. Cornwall is unsatisfactory. Carbis Bay is the extreme western limit of the European range of the species, J. E. Lousley.

753/46j. Carex gracilis Curt., var. tricostata (Fr.) Aseh. In the Ewenny River, Glamorgan, v.-c. 41, A. L. Still. Det. W. H. Pearsall.

753/47. Carex aquatilis Wahl. Very abundant in the Teifi Marshes and on the banks of the R. Teifi above and below Tregaron, Cardiganshire, v.-c. 46. *C. gracilis* is also recorded from this locality, but we did not see it. P. M. Hall and W. A. Sledge.

*753/51. Carex rigida Good. Tinto Hill, Lanark, v.-c. 77, E. C. Wallace.

753/62. Carex divulsa Stokes. Fairly open spinney near Oxford, v.-c. 23, R. C. Burges.

753/67b. Carex arenaria L., var. remota Marss. Near Borth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge.

†754/1. Panicum miliaceum L. Cultivated fields near Owe Creek, E. Kent, v.-c. 15, J. P. M. Brenan.

†754/2. Panicum capillare L. Tonbridge Corporation Tip, W. Kent, v.-c. 16, J. P. M. Brenan.

†754/7(2). **Panicum virgatum** L. Near Salisbury, S. Wilts, v.-c. 8, H. J. Goddard. Det. C. E. Hubbard.

†754(3)/1. **Brachiaria Isachne** (Roth) Stapf. Roadside at Walton-in-Gordano, v.-c. 6, det. C. E. Hubbard, J. P. M. Brenan.

758/2. Spartina stricta (Ait.) Roth. Marshes at Shellness, Sheppey, E. Kent. v.-c. 15, J. P. M. Brenan.

758/3. Spartina Townsendii H. & J. Groves. Brooks west of Dungeness, v.-c. 15, J. P. M. Brenan; *Portskewett, Monmouth, v.-c. 35, thoroughly established, 1935, E. Vachell.

†763/3. Sorghum cernuum Willd. Grangetown, Cardiff, v.-c. 41, Mrs Sandwith, Miss Vachell, and J. P. M. Brenan; Dagenham, v.-c. 18, J. P. M. Brenan.

766/1c. Anthoxanthum odoratum L., var. villosum Lois. A very robust plant with hairy leaf-sheaths and glumes, on sandy ground at Wrotham Heath, W. Kent, v.-c. 16, J. P. M. Brenan.

770/2b. Alopecurus alpinus Sm., var. Watsoni Syme. On the Glas Maol and in Glen Callater, S. Aberdeen, v.-c. 92, E. C. Wallace.

770/4. Alopecurus bulbosus Gouan. Salt marsh, west side of Hayling Island, S. Hants, v.-c. 11, P. M. Hall.

770/6. Alopecurus aequalis Sobol. Near Grazeley Green, Berkshire, v.-c. 22, P. M. Hall and N. D. Simpson.

*783/1. Calamagrostis epigeios Roth. One small clump in a wood 12 miles N. of Campbeltown, Argyll, v.-c. 101, Latimer McInnes.

794/3b. Avena pratensis L., var. alpina Sm. With dense panicle and broad leaves (6 mm.), Caenlochan Glen, Angus, v.-c. 90, E. C. Wallace.

†808/1. Cynosurus echinatus L. One plant by the roadside, Denham Village, Bucks, v.-c. 24, C. E. Marks; in abundance on dry heathy banks on Hayes Common, and in waste places about the village, W. Kent, v.-c. 16, F. R. Browning (add to *Comital Flora*); *Weymouth, Dorset, v.-c. 9, N. D. Simpson.

†*824/1. Poa Chaixii Vill. Banks of the river Tay among Rhododendrons, Kenmore, Mid-Perth, v.-c. 88, J. Chapple.

824/7. Poa nemoralis L. Abundant, Cwm Woods, Aberystwyth, and Devil's Bridge, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge. Add to *Comital Flora*. Previously given in *List of Welsh Flowering Plants* but bracketed by Salter, *Flowering Plants and Ferns of Cardiganshire*, "occurrence probable but needs confirmation."

†826/1. Bromus maximus Desf. Roadside between Porchester and Fareham, S. Hants, v.-c. 11, P. M. Hall.

†827/8. Bromus rubens L. Dagenham, S. Essex, v.-c. 18, compared at Kew, J. P. M. Brenan.

827/19b. Bromus hordeaceus L., var. glabratus Druce. Salisbury, S. Wilts, v.-c. 8, H. J. Goddard. Det. C. E. Hubbard.

827/19(2). Bromus lepidus O. R. Holmberg. Near Antony, *W. Cornwall, v.-c. 1; Belstone, *N. Devon, v.-c. 4; Kingston, *Dorset, v.-c.

9; roadside at Hothfield Heath near Ashford, *E. Kent, v.-c. 15; roadside at Beltring, W. Kent, v.-c. 16, June 1933, J. P. M. Brenan.

*827/19(2)b. Bromus lepidus Holmberg, f. **lasiolepis** Holmb. Marchwood, S. Hants, v.-c. 11, N.C.R. for species, H. J. Goddard.

†829/6. Lolium rigidum Gaud. Avonmouth Docks, v.-c. 34, June 1934, C. I. and N. Y. Sandwith.

†835/4. Hordeum Hystrix Roth. (Gussoneanum Parl.). Rubbish tip, Bristol, 1927; St Philip's Marsh, Bristol, v.-c. 34, 1916 (recorded in *Adventive Fl. Port Bristol* as *H. marinum*); Avonmouth Docks, W. Gloucester, June 1935, all records by C. I. and N. Y. Sandwith.

*836/3. Elymus europaeus L. Denham, Middlesex, v.-c. 21, C. E. Marks.

844/2×5. Equisetum arvense L. × limosum L. (E. litorale Kühlew). Is proving to be quite common in Ireland, having been recorded already from 19 v.-cs., mostly in the form f. *elatius* Milde, R. L. Praeger.

844/8. Equisetum trachyodon Braun. Is widely spread in Ireland, and has been recorded from 16 v.-cs. from Kerry to Londonderry, and Dublin to Mayo, R. L. Praeger.

*844/9d. Equisetum variegatum Schleich., var. arenarium Newm. Very abundant on burrows between Kidwelly and Pembrey, Carmarthenshire, v.-c. 44. Apparently a N.C.R. as 44 is not given in *Comital Flora*, *Top. Bot.*, or either *Supplement*, and the *List of Welsh Flowering Plants* does not include the Pteridophyta. We did not see this species at Kenfig, Glamorganshire, where it is replaced by a procumbent form of *E. palustre*; plentiful on sandhills, Ynys Las, near Borth, Cardiganshire, v.-c. 46, P. M. Hall and W. A. Sledge.

851/9. Asplenium septentrionale Hoffm. Rock crevices of Minto Crags, Roxburgh, v.-c. 80, Miss P. Leake.

854/3. Polystichum aculeatum Roth. Near a stream, Minto Glen, Roxburgh, v.-c. 80, Miss P. Leake.

856/2×3. Dryopteris cristata (L.) A. Gray × D. spinulosa Kuntze = × D. uliginosa Kuntze. Three specimens seen at Hickling, E. Norfolk, October 1934, J. E. Lousley.

856/11. Phegopteris Robertiana Braun. Has been found in N.E. Galway on limestone, previously unknown in Ireland, R. L. Praeger.

*859/1. Ceterach officinarum L. One plant growing in the crevice of an old wall near Campbeltown, Argyll, v.-c. 101, frond sent to Secretary, Latimer McInnes.

863/1. Hymenophyllum tunbrigense (L.) Sm. Plentiful with *H. peltatum*, Devil's Bridge, Cardiganshire, v.-e. 46, P. M. Hall and W. A. Sledge. Add to *Comital Flora* but already recorded "rare" in Salter's *Flowering Plants and Ferns of Cardiganshire*.

866/1b. Ophioglossum vulgatum L., var. polyphyllum Braun. Lundy Island, N. Devon, v.-e. 4, July 1935, Dr F. R. E. Wright.

869/2. Isoetes echinospora Dur. Llyn Fach, Glamorgan, v.-c. 41, Miss Thomas per E. Vachell. Det. W.H.P. Both this species and *lacustris* have been recorded from this water, but have not been found for some years, W.H.P.

*872/6. Nitella mucronata Miquel. R. Cuckmere, Alfriston, E. Sussex, v.-e. 14, J. E. Lousley.

*876/7b. Chara contraria Kuetz., var. hispidula Braun. Cahir R., near the Bridge, Clare, v.-e. H. 9, N. D. Simpson.

876/11. Chara aculeolata Kuetz. (C. polyacantha Braun). Wicken Lode, Cambridge, v.-c. 29, det. W.H.P., Mrs Macalister Hall.

*876/16. Chara fragilis Desv. Castle Howard, N.E. Yorks, v.-c. 62, given for N.W. Yorks, v.-c. 65, in *Brit. Charophyta*, ii, 63, Mrs E. M. Macalister Hall. Det. W.H.P.

876/17. Chara delicatula Ag. Mynydd-y-glew, Glamorgan, v.-e. 41, Mrs E. M. Macalister Hall. Det. W.H.P.

THE IVEL DISTRICT OF BEDFORDSHIRE.

J. E. Little, M.A.

[I had promised Mr Little to publish this paper as a necessary complement to that on "The Botany of the Ivel District of Hertfordshire" in the B.E.C. 1932 Rep., 375-387 (1933), but his lamented death last January left it unfinished. However, by the help of his friends, including E. F. D. Bloom, M.A., B.Sc.; T. B. Blow, F.L.S.; Chas. Crouch; T. A. Dymes, F.L.S.; A. W. Guppy; Reginald L. Hine, F.S.A.; Mrs E. Macalister Hall; Richard Morse, F.L.S.; Hugh Phillips; and the late Francis Ransom, F.C.S., who have supplied additional information or read through the MS. in draft, it has reached its present form. To his daughter, Miss Katharine D. Little, who has acted as secretary to the work, and to all who have so willingly collaborated in its completion, our warmest acknowledgments are tendered.—Ed.]

BOUNDARIES.

The district of Bedfordshire drained by the River Ivel and its tributaries—No. 4 in *V.C.H.Beds,* see (23)—is considerably larger than the portion of Hertfordshire included in its basin.

Starting from Stotfold, just outside the latter county, and working eastwards and northwards, we find that it touches the following townships:—Edworth, Potton, Everton, Tempsford, Blunham (where the Ivel enters the Ouse), Morhanger, Warden, Clophill, Tingrith, Eversholt, Toddington, Sundon, Streatley, Barton-in-the-Clay, Higham Gobion, and so follows the Herts border back to Stotfold.

It will be convenient, as frequent reference will be made to the Herts and Beds areas, to coin two names, viz., Southivel for the Herts area (Herts District No. 2), dealt with in B.E.C. 1932 Rep. (1933), and Northivel for the Beds area (Beds District No. 4), now under consideration.

GEOLOGY.

Northivel includes a part of the chalk scarp, the gault plain to the north of it, and a portion of the greensand belt roughly parallel to the chalk from W.S.W. to E.N.E., and a small exposure of Oxford Clay.

Through the greensand the Ivel cuts its way northward at Sandy Gap, and this lower portion of its course is chiefly bordered by alluvial land. Sandy Gap has determined the route of the L.N.E. Railway.

The "Lower Chalk" of older writers includes the Middle Chalk, i.e., all below the Chalk Rock (cf. J. E. Lobley "Cretaceous Rocks of England," *Trans. Watford Nat. History Socy.*, Vol. I, p. 13), so that when Jas. Saunders (28) says of *Senecio integrifolius* "apparently limited to the Lower Chalk escarpment" the term must be understood with this qualification. The plant occurred near Galley Hill, Streatley,

1929, at an altitude of 600 feet, right up to the Chalk Rock (E. F. D. Bloom).

The solid Geology is, however, masked by various deposits, such as: (1) Clay-with-flints, a deposit possibly of glacial origin, derived partly from the Chalk by solution of the lime content and partly from Tertiary beds. The relative proportions of clay and flints vary considerably in different localities. (2) Boulder clay and gravels ultimately due to the Ice-age. (3) More recent mixture of soils due to downwash from the hills particularly affecting the gault plain, on the south from the chalk scarp, and on the north from the Greensand.

THE NAME IVEL.

The river-name Ivel is considered to be pre-Saxon by E. Ekwall (39), who states "Gifla (gen. pl.), circa 1150, is not really the name of the river itself, but the name given in the Tribal Hidage to the people who dwelled by it" (K. and E.M.H.). "That river name, however (Givle, circa 1250), is certainly the source of the territorial name given above" (*E.P.N. Beds*, pp. xviii, p. 8, 94). It is preserved in two place names of territorial signification: Northill (North-Ivel) and Southill (South-Ivel). In modern times the name Ivel is applied by general agreement to the lower course of the river between Langford and Blunham. But while the 1 in. O.S. map marks the stream from Baldock to Henlow as Ivel, Beds residents consider the longer arm, sometimes marked as Flitt, from Flitwick to Shefford and Langford, as better entitled to the name Ivel. An old map (Dury & Andrews' Herts, 1795) marked the Baldock water as Rhea, which, like the Ashwell feeder of the Cam called Rhee, represents the O.E. *æt there ea* ("at the water," becoming later "at the Ree"), so that Ree was taken for and became a proper name for a river, as in numerous other examples.

The western tributary, the "Flitt," and the nameless eastern tributary from Hatley and Potton formerly had adjacent to them considerable areas of marshy ground in which peat was formed, but these, owing to drainage and other causes, have vanished with the exception of Flitwick Moor, where peat is still being dug for commercial purposes.

FLITWICK MOOR.

This interesting relic of once much more extended peat-bogs is still worth visiting. In 1896 Arthur and Gulielma Lister, with Charles Crouch and James Saunders, recorded 36 species of *Mycetozoa* (18, 19, 20), but Charles Crouch (*in litt.* to J.E.L.) notes that on August 28, 1928, he could only find a single plasmodium.

In 1926 R. Morse (37) listed over 100 species of Flowering plants, among them being *Potentilla palustris*, which is also known to C. Crouch on Westoning Moor (17). C. Crouch also records *Viola palustris* for these two stations in 1930.

POTTON MARSHES.

The (nameless) eastern lateral feeder of the Ivel had upon it 150 years ago an area called by C. Abbot (1, 2) Potton Marshes. For this

station he records a number of bog-plants which have since become extinct, as *Vaccinium Oxycoccos, Utricularia minor, Schoenus nigricans.*

Along the watercourse between Potton and Sandy (on Biggleswade Common) is still an interesting hunting ground for marsh and aquatic plants. This small stream has upon it at Sutton an old packhorse bridge, dating from the XIVth century (23), built, like many of the churches in the district, of local stone obtained from harder bands in the greensand. It is still in excellent order. The bridge is too narrow for any wheeled traffic, and the road still crosses the stream by a splash or ford alongside the bridge. The bridge has two arches, and my brother, J. W. Little, as an architect, on seeing the photograph of it at once asked why two arches should be necessary on a stream of such small present volume. The answer to this question may perhaps lie in a consideration of former conditions. At the time of Domesday Survey (1086), there was a mill " in Hatelai " (Hatley Cockayne) worth 18/- and one in Potton worth 5/- per annum (23). Sutton was South-tun in Potton. These suggest a larger and more constant flow of water than at the present time, coming from the gault and boulder-clay area higher up.

The natural condition of the gault and boulder-clay area in still earlier time would be forest. Two small woods still existing, viz., Potton Wood and Hatley Wood, illustrate the soil conditions. Potton Wood drains towards Gamlingay and so into the Ivel. Hatley Wood apparently drains into the Rhee and Cam (23). In April 1932 the water lay all over the wood, filling the wheel tracks in the ridings, and standing several inches deep in small depressions. Gamlingay Wood (Cambs) on the opposite side of the valley was in the same state in April 1927 and the ecological conditions were similar. The water hangs all the winter on the surface of the unabsorbent clay and slowly finds its way into the water courses.

The traces of a dam across the valley below Warden Abbey suggest that this was the site of a mill appendant to the Abbey. The stream draining out of Warden Great Wood is now insignificant, but there are near the site of the Abbey various ponds, which may have been used in connection with the larger millhead to store fish for monastic fast-days. The stream still supplies the water for the Lake in Southill Park, the largest piece of water in the neighbourhood.

To come back to our Packhorse Bridge at Sutton, there seems to be adequate evidence of a much larger flow of water in the streams of our district in mediaeval times, and this together with increased liability to flood off the assarted clay lands may explain why two arches were necessary when the bridge was built.

The larger watercourses of Northivel produce marsh plants and aquatics absent or rare in the upland streams of Southivel, as *Ranunculus pseudo-fluitans, Symphytum officinale, Scutellaria galericulata, Potamogeton perfoliatus, Scirpus lacustris.*

At the heads of two small springs rising in the Lower Chalk at Cadwell, watercress is cultivated, as in our Hertfordshire portion.

NORTHIVEL.

Northivel affords *for our district* an opportunity of contrasting the flora of the chalk with that of the greensand. On the latter are to be found arenicolous plants absent in Southivel. Such are *Corydalis claviculata*, *Teesdalia nudicaulis*, *Erodium pimpinellifolium*, **Ornithopus perpusillus*, *Potentilla argentea*, *Vicia lathyroides*, *Jasione montana*, *Hypochoeris glabra*, *Arnoseris pusilla*, *Carex Pairaei*. On the greensand the orchids so abundant on the chalk scarp are very scantily represented. This distinction is of great value locally, but one may quote a remark by M. Ch. Flahault (22) to show that it must not be presumed to be everywhere of general value. He says: "Beaucoup d'espèces considérées au nord des Cevennes comme calcicoles se trouvent dans le domaine méditerranéen sur tous les sols." . . . "Elles ne sont donc pas calciphiles." "Telles sont: *Clematis Vitalba*, *Helianthemum vulgare*, *Cirsium eriophorum*, *Juniperus communis*, *Helleborus foetidus*." . . . "On a de bonnes raisons de penser que les plantes qui prospèrent sur les sols calcaires s'y trouvent comme les espèces halophiles dans les terrains salés, qu'elles supportent le calcaire et qu'elles y occupent une place d'autant plus grande, qu'elles ne sont pas en lutte avec des espèces plus fortes. Il n'y aurait donc pas de plants calciphiles mais seulement des plantes calcicoles et des espèces calcifuges, trouvant asile dans des sols dits silicieux par la necessité d'échapper aux effets funestes du calcaire."

The five species hereabove quoted are calcicolous in our area, although *Cirsium eriophorum* is now extremely rare, perhaps owing to close trimming of hedgerows. It does, however, occur also in Northivel on non-calcareous soil.

As an example of a plant with us calcifugous, and perhaps much more widely also, we may take the Foxglove, which is entirely absent from Southivel. It is, so far as I know, also absent in Northivel, but occurs on the greensand at Aspley just outside our area.

PRESENT DAY ASPECT.

The former aspect of Northivel has been so transformed, on the one hand by plantations of Conifers especially on the Greensand, and on the other by close cultivation for market gardening purposes, that few even semi-natural areas remain to indicate what was once its predominant character; and we must draw our conclusions from a few floral "islands" scattered along the outcrop of the Greensand from Ampthill to Potton and isolated like coral-atolls in an ocean of cultivation.

The market gardening area, originally centered round Sandy and Biggleswade, and looking to the railways for transport of its produce, has during the last 20 years gradually extended much more widely and, so far as the growing of vegetables like Brussels Sprouts is concerned, has now spread into Southivel. To this extension several causes have contributed. (1) By too continuous cropping without sufficient change,

*Now hard to find at Maulden, crowded out by perennial vegetation as in the two localities at Millbrook (C. Crouch).

the land first utilised has become subject to diseases (F. H. Davis). (2) Land further away can be obtained at a lower rent. (3) Conveyance in lorries from the farms by road has largely taken the place of rail transport, and it is no longer necessary that the land should be near a railway. There has also been much ribbon development of houses on certain roads, as between Clophill and Ampthill. The result of these changes has been an extensive obliteration of the former natural or semi-natural flora.

EARLIER ASPECT.

As soon as settlement began, and clearance of the ground for agriculture, there would be increased liability to flood.

Even so far back as the reign of Ine, King of the West Saxons, it had become necessary to regulate the clearance of forest. And although the Laws of King Ine (circa 690 A.D.) do not directly apply to our area, which at that time may have been under Anglian or East Saxon rule, they illustrate the conditions under which settlement was proceeding.

Two clauses given in Sweet's Anglo-Saxon Reader, dealing with what may be called early forest law, are here translated:—

43. "*Of burning of forest.*"

"If a man burn down a tree in woodland, and it become known who did it, let him pay full penalty: let him pay LX shillings, since fire is a thief."

"If a man fell in woodland very many trees, and be afterwards detected, let him pay penalty for iii trees, each at XXX shillings. Nor shall he pay for more of them, however many they be, because *the axe is an informer* and not a thief." [Fire, a thief, working secretly. The axe, an informer, working openly and announcing itself by the sound.]

44. ("*Of timber obtained without leave.*")

"If a man fell a tree under which XXX swine can stand, and it be discovered, let him pay LX shillings as penalty."

ASSARTS OR ESSARTS.

This term was in use after the Norman Conquest to denote clearings of waste or forest land. That they were still going on in the thirteenth century is shown by Cottonian MSS., *Nero E.VI*, fol. 131b. (in Brit. Mus.), where is made mention of them in the neighbourhood of Audebury (Aldbury, near Tring, Herts). And another document in the same *Nero E.VI* concerns an agreement between Almeric, Master of the Temple, and Mabel, Abbess of Elstow, respecting tithes in Hitchin in 1286 A.D., "exceptis Essartis de quibus ipsii Templarii deeimus hucusque tenuerunt."

Assarts are mentioned in documents connected with the foundation of the Cistercian Abbey of Warden, Beds.* It was called "St Mary *de Sartis*" (St Mary of the Assarts).

*Those who wish to gain fuller information should consult Dr G. Herbert Fowler's recent work, *Cartulary of the Abbey of Old Wardon*, Oct. Beds. Hist. Record Soc., xiii, whole volume (R.L.H.).

Two passages from *V.C.H. Beds* (23) are here given:—

"The original endowment of the Abbey comprised all the assarts of Warden and Southill with the wood between these two vills, with permission to cut what wood was wanted for the use of the monastery, and including pannage and herbage, etc., granted by Walter Espec; also the church of Old Warden, and part of the wood of Middleho which the Abbot of Ramsey granted. These grants were confirmed by Stephen, Henry II, and Richard I, and Henry III added the right to assart or enclose the wood of Middleho, Hunts" (*V.C.H. Beds*, I, 364).

"Rowney apparently formed part of the original grant of Walter Espec to Warden Abbey, consisting of those woodlands which overlapped from Old Warden into Southill, for Rowney Grange was named among the possessions of Warden Abbey in 1198." . . . "A grant of free warren in the woods belonging to Rowney Grange was made to Warden Abbey in 1252" (*V.C.H. Beds*, III, 259).

Pannage was the right of swine-pasture in the woods, and implies the presence of oak-wood. In D.B., 1086, Southill had woodland sufficient to feed 200 swine.

PLACE NAMES.

A few names connected with former conditions (of vegetation) may here be given (38):—

Broom: In D.B., 1086, *Brume*. So called from the abundance of the broom.

Eversholt: "Boars' Wood."

Furzdon Hall: 1 in. O.S., 1835. On Biggleswade Common.

Gravenhurst: O.E. "Wooded hill of the grove or thicket."

Losurde (temp. Henry II): in Warden. "Wood of the swine."

Moggerhanger (Morhanger): O.E. *hangra*, a wood.

Rowney: from O.E. *ruhan* (ge) *haege* (in dative), "rough enclosure."

Ruxox: in Flitwick. O.E. *Hroces-ac*. "Oak of Rook."

Watermill Bridge: 1 in. O.S. 1 mi. S.W. of Sutton.

Millhouse Fen: in Sutton, near Portobello Farm. There is still a wood with reed-swamp.

Wilbury, in Stotfold: O.E. *Wiligbyrig* in 1007. "At the burh of the willow." An old settlement of the Iron Age was discovered in 1932 at Wilbury Hill (W. H. Lane).

Other interesting place names are:—

Gamlingay Bogs: Cambs. (1 in. O.S., 1835), now vanished. Probably Abbot's *Potton Marshes* was a continuation of these within the Beds border.

Conger Hill: in Toddington M.E. *conynger*, "rabbit warren." cf. *Congigree Wood*, now stocked up, in Tithe Map of St Ippolyts, Herts.

Holme (Mills): near Biggleswade (O.N. *holmr*, Dial. *holm*, "piece of low-lying ground by a river or stream." cf. Portholm, Huntingdon.

Brache or *The Braches*: 2 miles N. of Sandy. (1 in. O.S. 1835). This appears in Cott. MSS. *Nero E.VI*, fol. 131d, as "unam carucatam terre scilicet triginta acras in *Labrache*." Date—after the suppression of the Knights Templars in 1307.

There was also a Breach in Maulden ("Are Brache") in 1307. Cf. also Breachwood Green, Herts; and Brach Farm, near Luton.

These derive from:—*Brec, Bracc* O.E., Dialect *Brach, Breck*. (1) Strip of uncultivated land. (2) Strip of land taken from a forest by royal licence, for temporary cultivation. The cognate O.E. verb, *brecan*, to break, shows that the dominant idea was that the land had to be broken up. This is exemplified in the "Breck" lands of Norfolk and Suffolk, where land was taken for temporary cultivation, and then went back to waste until it recovered from the cropping.

In the 1885 1 in. O.S. appear between Sandy Heath and The Hasells North of the Long Riding, five cultivated strips each surrounded by long "belts" of plantation. In recent O.S. maps the 4 intermediate belts have disappeared, leaving only the 4 external ones.

As in the Norfolk and Suffolk brecks, the light soil was presumably liable to be blown away by strong winds. Hence the need at first for protective belts. In 1911 I saw the sand rising in clouds under horse-harrowing near Sandy Heath.

Land thus temporarily broken up, and then left for some years to recover itself, affords in the latter stage an open association in the ecological sense, favouring such plants as *Arnoseris* and *Hypochoeris glabra*, etc., which are likely to disappear under more continuous cultivation. *Arnoseris* occurred in hundreds on a field at Sutton about 1928, where none was to be seen in 1932.

At Maulden in 1911 the wind had "blown out" a sand-pit and distributed it over the adjoining field—after the manner of a "blow-out" on sand-dunes. On the new sand surface thus created were flourishing *Filago minima*, *F. germanica*, and *F. apiculata*. *Galinsoga parviflora* was growing in many hundreds in 1932 at Sutton on a sandy field cropped with runner beans.

TURBARY.

This was the right to cut turf or peat. "... *Et libertates in turbariis et brueriis*" (Cott. MSS. *Nero E.VI*, fol. 131d). Cf. the cutting of peat on Flitwick Moor already mentioned.

SANDY HEATH.

This in 1307 appears as "Bruera de Sannedey." A small portion still remains uncultivated. Bruera is represented by Mod. French *bruyère*, heath, from the Low Latin *Brugaria*. Compare Mod. English "Brier-wood pipes," made from the roots of a heath. The natural vegetation of Sandy Heath is composed of such plants as *Quercus Robur* (scrub), *Betula*, *Pyrus Malus*, *Sarothamnus*, *Ulex europaeus*, *Calluna vulgaris*, *Teucrium Scorodonia*, with abundance of *Deschampsia flexuosa*

and occasional *Carex pilulifera* and *C. Pairaei*. *Pteris aquilina* is abundant.

CHANGE IN THE DISTRIBUTION OF WOODLAND.

The oak wood of the neighbourhood of Warden is still represented by Warden Great Wood, Park Wood, and Sheerhatch Wood. Most of the rest has been cleared, and has been replaced by pasture and arable land. The change in the aspect of the Greensand has already been mentioned. It can therefore be said that there has been a considerable reversal of former conditions in the distribution of woodland.

About the year 1916, a considerable part of Rowney Warren, planted with coniferous trees, was felled for timber. Later, about 80 acres were replanted with Scotch Pine and European Larch. Sitka Spruce and Ash were also planted, but failed to survive the frosts.

An uncommon variation of the Oak (*Quercus Robur*, var. *fastigiata*) is planted in Southill Park in grass near the Pinetum Nursery. The branches are closely appressed to the main stem, and give the tree the aspect of a Lombardy Poplar. It is found wild in the valleys of the Western Pyrenees and on the Landes near Bordeaux (Loudon).

Castanea sativa, though not mentioned in Saunders, is not uncommon in plantations.

CLIMATE.

As an indication for Northivel of a milder climate in spring, *Crataegus oxyacanthoides* was observed in flower near Old Warden in 1912 about 10 days before any of the segregate was open in Southivel; and the Cowslips on the clay in this region are very much finer than those on the chalk. *Lamium hybridum* had in the same year entered on its entomophilous state at Southill earlier than in Southivel.

BEDFORDSHIRE BOTANISTS.

The county was fortunate in being one of the earliest for which a local Flora was published: the *Flora Bedfordiensis*, (1) by Abbot, issued in 1798. The Rev. Charles Abbot (circa 1761-1817), born probably at Winchester, was a Fellow of New College, proceeded M.A. in 1788 and took his B.D. and D.D. degrees in 1802. He was elected F.L.S. in 1793. In 1787 he became an Usher at Bedford Grammar School (now Bedford School) and in 1788 Vicar of Oakley Raynes, a few miles North of Bedford. It is said that he neglected his scholastic duties, devoting the majority of his time to his parish and to botanical studies; this caused him to be passed over as a candidate for the headmastership in 1810 at the death of Hooke.

He was in frequent communication with many of the eminent botanists of his time, among whom may be mentioned Dr (afterwards Sir) J. E. Smith, James Sowerby, and Thomas Martyn, professor of Botany at Cambridge (4).

The writer has a copy of the Flora, inscribed by the author in a beautifully neat quill-pen hand, " To Caleb Goodyear, Esqre., Guildford,

a mark of gratitude and esteem, from the author." And more fortunate still, he has had the opportunity of examining another copy, interleaved with numerous MS. notes, which from the handwriting and references to Mrs Abbot, as well as from numerous entries carrying on those of the printed work, is undoubtedly the author's own copy (1), embodying much additional matter, such as references to Sowerby added in ink, with a view to another edition. This, however, never reached publication, and so perhaps some allusion to the additions may be welcomed.

The author follows his own numbering, adding an asterisk to indicate where the addition is to be inserted.

Thus: " * 400. Corn Adonis. *A. autumnalis.* Sowerby 308 . . . St Leonards, Pickerings. Obs., Mrs Abbot has often brought this elegant plant in from the cornfields and it would have been inserted in the body of the work, but from the suspicion of its not being indigenous." [A specimen of *A. autumnalis* (*A. annua* L., em Mill) was brought to the writer from Pegsdon, 1930.]

Even the erasures are of interest. I find for instance the following entry, crossed out. " 627. Yellow Mountain Pansy. *Viola lutea* . . . . Luton Downs and Ford End. Mrs Abbot." *V. lutea* is a perennial mountain plant not occurring in Hertfordshire and Bedfordshire. Probably Mrs Abbot found the large-flowered sulphur-coloured annual segregate of *V. tricolor* L. now called *V. contempta* Jord., which occurs on arable land about Hitchin (det. E. Drabble).

Or again: " * 1220. Man Ophrys. *O. anthropophora* . . . Pertenhall, on the borders of Huntingdonshire, Rev. T. Martyn, P.B. (Professor of Botany). Obs., Helmet brownish." The observation suggests to us that the plant was perhaps *Habenaria viridis*, which Abbot does record in the body of the work as " 635, Frog Satyrion, *S. viride.*"

In the author's copy the plates, drawn upon copper by James Sowerby, have been hand-coloured in the same manner as in *English Botany.* (In the ordinary copies they are uncoloured). Some indeed, as *Viola palustris* Sowerby 444, are actually from the *E.B.* plates, with the *E.B.* numbers erased, and a serial number for the *Fl. Bedf.* substituted.

One, *Alchemilla vulgaris* (Abbot No. 1) was drawn for *E.B.* but not actually used. See Garry's Notes (24).

There are frequent MS. notes, such as " *Scirpus albus* " (=*Rhynchospora alba*), " one of Sowerby's desiderata "—or to " 533. *Trifolium ochroleucum.* Sent July 1, 1800," obviously either to Smith or Sowerby.

Another entry is: " * 28. Compressed Bog Rush. *S. compressus* . . . Sowerby 791 . . . Bogs and meadows . . . Potton Marshes and Fenlake Bog." The species does not appear in Saunders (28), and now, although the record has only just been recovered, the plant must almost certainly be placed in the list of extinctions.

There is much additional information about Cryptogams, which it is hoped to submit to revision by specialists before it is published.

Whereas in Hertfordshire, at the close of the eighteenth century, there does not appear to have been any botanist taking part in Smith's work by contributing specimens, quite a number of plants were sent from

Bedfordshire, largely by Abbot, many of which were drawn for *E.B.* by Sowerby (24). Some examples from Northivel are here given:—

E.B., Tab. 322. *Geranium phaeum*. Everholt [=Eversholt]. Rev. Chas. Abbot, Bedford.

E.B., Tab. 902. *Erodium moschatum* L'Hérit. Ampthill Warren, Abbot. (See "Notes on particular species," post.)

E.B., Tab. 1108. *Lathyrus latifolius* Hawnes (=Haynes) and Bromham. Rev. Dr Abbot. [This, fide R. A. Pryor, *Journ. Bot.*, 1881, was *L. sylvestris*].

E.B., Tab. 840. *Euphorbia Cyparissias* L. Barton Leat Wood, August 30, 1799. Rev. C. Abbot.

E.B., Tab. 72. *Malaxis paludosa* Sw. Bogs near Potton, July 27, 1792. By favour of Rev. C. Abbot.

The two following lists offer an instructive contrast between 1796 and 1935:—

I. Plants now common, noted as rare by the Rev. C. Abbot:—*Arabis Thaliana*, *Trifolium hybridum*, *Ilex Aquifolium*, *Sium angustifolium*, *Antirrhinum minus* (*Linaria minor*), *A. Cymbalaria* (*L. Cymbalaria*), *Betula Alnus* (*Alnus rotundifolia*). It is noteworthy that C.A. makes no mention of the Hornbeam as a Bedfordshire tree, and considers the Holly and the Alder rare.

II. Plants now rare, noted as common by the Rev. C. Abbot:—*Ranunculus parviflorus*, *Lathyrus sylvestris*, *Prunus Cerasus*—see Hamson (26) and Saunders (28), *Pimpinella major*, *Sambucus Ebulus*, *Serratula tinctoria*, *Carduus eriophorus*, *Melampyrum cristatum*, *Chenopodium murale*, *Pedicularis palustris*.

The Rev. W. Crouch (1818-1846), of Cainhoe, was for a time curate in charge of Lidlington, and died in July 1846, aged 28.

In his Herbarium (6), a plant under the name of *Veronica agrestis* L. from Cainhoe, 1843, is in fact *V. persica* Poir., var. *Tourn.*, and appears to be the first record in the county for the latter species. True *V. agrestis* L. occurs at Luton and Aspley Guise, but has not been seen in District No. 4 in Beds, though it may very well occur on suitable ground. Saunders calls *V. agrestis* common, following Abbot, but it is certainly not so now, and has been confused both with *V. polita* Fr. and *V. persica* (45).

Pedicularis palustris, recorded for Bogs at Gravenhurst, 1842, by the Rev. W. Crouch, is now extinct there. It survived until about 1912 at Walsworth, Herts, but there also is now probably extinct.

John Hamson (1858-1930) was born at Naseby on September 11, 1858, and died at Malvern on June 4, 1930. He was for many years sub-editor of the *Beds Times and Independent* and during that time kept records of Bedfordshire plants, incorporating therein all the previous matter collected by the old Bedford Natural History Society, W. Crouch, C. Crouch, J. McLaren, E. M. Langley, J. Saunders, etc. His

manuscripts, bound in five volumes, passed to the Bedford Natural History and Archaeological Society, and are still being dealt with (1936) by A. W. Guppy, of Bromham, Bedford. He wrote *An Account of the Flora of Bedfordshire* (25) which was published by the Beds. Times Publishing Co. in April 1906, but now scarce and out of print.

Arthur Lister (1830-1908), F.R.S., brother of Joseph (Lord) Lister, was with his brother at school at Hitchin under Isaac Brown. (J. V. Lister, jun. Obituary Notice of A.L., *Proc. of Royal Socy.*, 1915.)

James Saunders (1839-1925), A.L.S., the eldest son of James and Louisa Saunders, was born at Salisbury on March 30, 1839, and died at Luton on April 16, 1925, aged 86. Being settled at Luton, he made contributions to the *Transactions of the Bedfordshire Natural History Society* for 1881, "On the Wild Flowers of S. Beds" (13), and for 1882, "Characeae in Beds" (14). He also sent articles to the *Journal of Botany* for 1883, 1884, 1889. These articles were in 1911 brought together, with additional matter, in a volume entitled *The Field Flowers of Bedfordshire* (28), collating, so far as was known to the author, the work of previous botanists, such as C. Abbot, W. Crouch, A. R. Pryor, W. Hillhouse, James McLaren, E. M. Langley, and John Hamson. It is pleasant to know that he presented a copy of this work to every school in Bedfordshire. No division of the county into districts was attempted, though Saunders had expressed a preference for two divisions, North of the Ouse and South of the Ouse. Both Saunders and Hamson were contributors to *V.C.H.Beds* (23).

Saunders' collection of Mycetozoa is housed at St Albans Museum, his Characeae at South Kensington, and his Herbarium at Luton Public Library.

The following records for Bedfordshire District No. 4—Northivel—were not included in Saunders' *Field Flowers of Bedfordshire* (28) and are also subsequent to the writer's notes in the *Journal of Botany* (34).

NEW TO BEDS DISTRICT, NO. 4.

Saunders (28).

PAGE

I. *Native.*

12. *Arenaria tenuifolia.* Barton Hills, 1928, Richard Morse. 1930, J.E.L.
18. *Lotus tenuis* Waldst. & Kit. Pegsdon, 1925, J.E.L.
34. *Adoxa Moschatellina.* Near Lilley Hoo, in Beds, 1931, J.E.L.
42. *Hieracium sciaphilum.* Railway, near Snailwell, Holwell, 1913, J.E.L.
43. *Taraxacum palustre.* Southill, 1913, J.E.L.
45. *Primula elatior* Jacq. Potton Wood, 1934, H. and D. Meyer !.
57. *Chenopodium ficifolium.* Arlesey, 1923, J.E.L.
58. *Polygonum lapathifolium* L., auct angl. Sandy Warren, J. of Bot., 1913; Rowney Warren, 1924; Flitwick, 1925; Chicksands, 1921; Campton, 1921, J.E.L.

P. maculatum. Campton, 1921; Rowney Warren, 1924, J.E.L.

59. *Rumex palustris* Sm. Pond near Warden Abbey, 1913, J.E.L; confirmed C. E. Moss.
60. *Euphorbia platyphyllos.* Waste and Farmyard, Hatley Cockayne, 1931, Miss M. Brown and J.E.L.; but Charles Crouch records a garden specimen from Eversholt in 1894.
61. *Ulmus minor* Henry non Mill. Near Stondon Vic, 1925 (B.E.C. Rep., 1925, p. 894, as *U. Plotii* Druce).
U. nitens Moench. Chicksands, 1921, J.E.L.
64. *Neottia Nidus-Avis.* Cainhoe Park Wood, 1843, W. Crouch. Malting Spinney, Ridgmont, 1917-19, C. Crouch.
71. *Potamogeton panormitanus* Biv.-Benn. Southill Park Lake, 1913 (See B.E.C. Rep., 1920, p. 152).
73. *Carex Pairaei.* Sutton, 1924, J.E.L.
73. *Carex pallescens.* Warden Great Wood, 1924, J.E.L. Cainhoe Park Wood, C. Crouch.
83. *Equisetum maximum.* Southill Park, 1930, J.E.L.
84. *Chara fragilis.* Southill Park Lake, 1928, J.E.L.; det. T. B. Blow.

II. *Aliens.*

6. *Barbarea intermedia.* Near Beacon Hill, Pegsdon, 1931, J.E.L.
6. *Sisymbrium pannonicum.* Brickyard between Henlow station and Shefford, 1930, J.E.L.
6. *Erysimum orientale.* Ampthill, 1922, C. Crouch.
7. *Malcolmia africana.* Arlesey, 1911, J.E.L.
8. *Lepidium Draba* L. R. Long's Brickworks, near Henlow station. 1920, J.E.L.
29. *Oenothera biennis.* Maulden, 1931, J.E.L.
38. *Galinsoga parviflora* Con. Galley Hill Sutton, J.E.L. and M. Brown.
Matricaria suaveolens Buch. Hatley Cockayne, Flitwick, Ampthill, Harlington, C. Crouch.
43. *Lactuca virosa.* S.W. of Caldecote, 1925; Pit between Henlow station and Shefford, 1930, J.E.L.
49. *Amsinckia Menziesii.* Biggleswade, 1922, Miss M. C. Williams !.
51. *Mimulus moschatus* D. Biggleswade, 1922, Miss M. C. Williams !.
78. *Cynosurus echinatus.* Cobbler's Wood, Ridgmont, 1921; Ampthill, 1922, 1926, C. Crouch.

NOTES ON PARTICULAR SPECIES.

Primula elatior Jacq. in Beds.—Attempts have been made by the writer to discover the true Oxlip (*P. elatior* Jacq.) within the borders of the district. In the E. several woods are of a character very similar to Gamlingay Wood, just over the Cambs border. They lie on the top of gentle elevations and are more or less flat and covered with scrub in which aspen and willow are abundant. In winter the water lies in all the folds of the tenacious boulder clay, so that even in the ridings of the woods progress is only possible by wading through the standing water. The geological and ecological conditions so well match those a

few miles away over the border, where *P. elatior* does occur, that it would not be surprising if further search were to establish its presence in this corner of Bedfordshire.

Potton Wood and Hatley Wood lie on the top of a gentle rise. Both are above the 200 foot contour. Potton Wood drains down towards Gamlingay (Beds 4); Hatley Wood is uncertain, but at one corner may drain into Cam (Beds 5). Both lie within the boulder clay area as delimited by Dr Whittaker in the map accompanying Miller Christy's paper (36), but the latter writes: "Along the southern boundary line of the Oxlip area I know of no outlying localities for the species and I believe that none such exist," and his delimitation of the areas of *P. elatior* Jacq. does not include Beds, although he agrees that *P. elatior* of Oeder's *Flora Danica* (Pl. 334), quoted by Abbot, does represent *P. elatior* Jacq. A. R. Pryor (*J. Bot.*, 1876 and 1881) and Saunders (28) both considered that Abbot's *P. elatior* was the hybrid. Saunders (28), while admitting *P. veris* × *vulgaris*, excludes *P. elatior* Jacq. Abbot had noted *P. elatior* as "common," but even the hybrid, though well recorded, can hardly be said to be "common" in Beds. (Stanfordbury Farm, near Shefford, 1912, and Hatley Cockayne, 1932, J.E.L.; near Potton, H. Meyer, 1934). Abbot's record is possibly responsible for the inclusion of *P. elatior* Jacq. in Suppl. to *Watson Top. Bot.*, repeated in Druce's *Comital Flora* (460/1). Hooker (*Stud. Fl.*, 1883) gives Beds as one of his four counties.

It is, therefore, satisfactory to record that in May 1934 six plants of *Primula elatior* Jacq. were found by Harry and Doris Meyer (Letchworth) near the head of a small watercourse draining out of Potton Wood, Beds, in district 4. (*Vidi* J.E.L.) This clears up a doubtful point. *P. elatior* × *vulgaris* was growing with the oxslips and hybrids such as *P. veris* × *vulgaris*. *P.* ? *vulgaris*, var. *caulescens*, was also present in another part of the wood. At that time Potton Wood was comparatively dry.

Water colour drawings of *P. elatior* and hybrids were made by Doris Meyer.

Primula elatior is called by Hooker and Coste inodorous, but at Stansfield, Suffolk, where it grows in great abundance, the plants have a distinct scent, differing both from that of *P. vulgaris* and *P. veris*. This fragrance was also noted in the Potton specimens.

Erodium moschatum L'Hérit. E.B., tab. 902, 1st ed. (963, 3rd ed.) and Erodium cicutarium L'Hérit. E.B., tab. 1768, 1st ed. (962, 3rd ed.).—F. A. N. Garry in his "Notes" (24) makes, I think, no comment on these two plates. Yet, on examining them in the 1st edition, a few years ago, one could not help feeling some doubt about the details on the plates. Tab. 902 was drawn from material supplied by Dr Abbot from Aupthill Warren, Beds. (*E. moschatum* has again been recorded for Beds., but not as native.) Tab. 1768 shows for *E. cicutarium* fertile stamens on filaments which are more decidedly dentate (this detail is omitted from the figure in Syme *E.B.*, 307, and is inconsistent with

the description) at the upper edges of their enlarged bases than in those drawn for *E. moschatum*, tab. 902; but in the description the stamens of *E. cicutarium* are characterised as "simple." The stipules are drawn as lanceolate acute, though in the description they are called ovate or acute.

Ascherson & Graebner (*Fl. n.-o. d. Flachl.*, 461), however, say for *E. cicutarium*: "Fruchtbare Staubfäden aus breiterem, *meist nicht gezähntem* Grunde plötzlich verschmälert," as if they had experience of occasional actual dentation, which is unknown to me in *E. cicutarium*, although there is considerable variation of abrupt or gradual dilation.

Ascherson and Graebner make no mention of one valuable permanent character of the carpel, viz., that in *E. moschatum* the subapical pits are glandular but in *E. cicutarium* are eglandular (Hooker & Babington). There is, as between *E. cicutarium* and *E. moschatum*, a difference in the angle at which the two subapical pits converge—more acute in *E. moschatum* and more obtuse in *E. cicutarium*.

Erodium cicutarium.

Ascherson & Graebner have the following arrangement in *Fl. n.-o.d. Flachl.*, 461:—

A. *holoporphyreum* (E. H. L. Krause in *Prahl Krit. Fl.*, 38. 1889).
Blättchen fiederspitzig, mit eingeschnitten *spitz*-gezähnten Abschnitten; Blüten *homogam*, kleiner; Blumenblätter ziemlich gleich, ungefleckt.

B. *pimpinellifolium* (E. Willd.).
Blättchen eingeschnitten, *stumpflich*-gezähnt; Blüten *proterandrisch*, grösser; Blumenblätter auffällig ungleich, die zwei oberen Blumenblätter mit *einem*, selten zwei oder vier, gelblichen bis dunkelgrauen Flecken.

B., the proterandrous plant, is described and figured by Hermann Müller (*Fertilisation of Flowers*, Translation 1863). He found it visited by hive bees, and Sprengel by humble bees, collecting pollen. But, failing insect visits, the plant is capable of self-fertilisation like A.

In Northivel what appears to correspond to A. (*E. cicutarium*, var. *vulgatum* Syme?) is found on chalk or gravel or sand; near Tingley Wood (chalk); near Wayting Hill, but within the Beds border (gravel); near Rowney Warren and Clophill (sand).

E. pimpinellifolium Sibth., corresponding to B., is found on sand—at Sutton, 1913-32; Sandy, 1924. It is apparently limited to sand, as in the other counties, e.g., Parkstone, Dorset (J.E.L.), and Oakhanger, Hants (J.E.L.).

Mycetozoa.—Species of Mycetozoa collected September 8, 1896, in Folly Wood, Flitwiek Moor, Beds, by Arthur and Gulielma Lister, James and Edgar Sannders, and Charles Crouch. (C.C. *in litt.*, 10th June 1931).

Ceratiomyxa mucida Schroeter.
Badhamia hyalina Berk.
B. lilacina Rost.
B. panicea Rost.
B. macrocarpa Rost.
B. utricularis Berk.
Physarum nutans Pers.
P. bivalve Pers.
P. Diderma Rost.
P. contextum Pers.
P. conglomeratum Rost.
Leocarpus vernicosus Link.
Craterium pedunculatum Trent.
C. mutabile Fr.
C. leucocephalum Ditm.
Chondrioderma reticulatum Rost.
C. testaceum Rost.
C. spumarioides Rost.
C. niveum Rost.
Didymium effusum Link.
D. crustaceum Fr.
D. Serpula Fr.
D. Clavus Rost.
Spumaria alba DC.
Diachaea elegans Fr.
D. subsessilis Peck.
Comatricha obtusata Preuss.
C. rubens Lister.
Lamproderma irideum Mass.
Dictydiaethalium plumbeum Rost.
Arcyria albida Pers.
A. flava Pers.
A. incarnata Pers.
Trichia persimilis Karst.
T. varia Pers.
T. fallax Pers.
Lycogala miniatum Pers.

On August 28, 1928, I spent a morning in the wood and did not find a "Myxie," and only one bit of plasmodium.

(Later) There is still a dearth of Myxies in this neighbourhood. In the above List of these *Diachaea subsessilis* need not be queried. Although not previously recorded in Europe it was abundant at Flitwick for a few years. On 10th June 1931, at Stopsley, we also collected the then undescribed *Didymium trochus*, *Badhamia ovispora*, *Physarum didermoides*, and others. (C.C. *in litt.*, 1/12/1935).

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SOME ROSE NOTES.

Lt.-Col. A. H. Wolley-Dod.

Since the publication of my "Revision of British Roses" in 1931, I have continued to receive notes from Dr R. Keller on our British forms, for which he has suggested many names which are new to the British list, and some are no doubt undescribed varieties or forms.

Further study confirms my opinion that a large number of specimens, probably the majority, do not agree precisely or even approximately with any described variety or form, and many of Keller's determinations are qualified by some such words as "approximately" or "near" some named form. In no British genus is the saying more strongly confirmed than in *Rosa* that Nature does not recognise species (or varieties or forms), and the names to be given to any specimen depend on nothing more substantial than the opinion of the namer as to the interpretation to be placed on the authors' descriptions. It has been remarked before that the solution lies between two extremes, either the foundation of a vast number of new varieties and forms, or else a wider interpretation of the descriptions of the existing ones.

I have endeavoured to follow the latter course, though there may be many botanists who think that there has been too much splitting in the genus, and not without reason, if one is to continue to place reliance on the points which have been selected by rhodologists for their resolution into varieties, etc. For example, it has been customary to place varietal value on the pubescence according to whether it exists beneath or above the leaflets, or even at all, as well as its amount and distribution, so that it is really difficult to say where one species, variety, or form ends and another begins. But to ignore these features would revolutionise the nomenclature of the whole genus, for which the time does not appear yet to be ripe. Similar considerations apply to dentition, glandular development, shape of fruit, etc., while the general appearance or facies of the specimens is ignored, the result being that most incongruous looking specimens come together under the same name.

The names which follow are for the most part those which have been given by Keller himself, or which have been suggested by his determinations, but which have been modified to bring them into line with our British nomenclature. In some cases it has been difficult to follow Keller, since he gives an interpretation of leading varieties which can hardly have been intended by their authors. This is especially the case with the varieties and forms ranged under the Subcaninae and Subcollinae.

It will be observed that I am not adopting, for reasons which I give, all the names which Keller has suggested, and only mention those which have been suggested by him in the past three or four years. There are

many more names which have been proposed by him in earlier years which I am not referring to in the present paper, unless further specimens have shown the desirability of adopting them. A short table is given at the end of this paper, giving the new names I am adopting, with very brief notes on their characteristics.

I am very greatly indebted to Mr E. B. Bishop and to Mrs Corstorphine for specimens, as well as for valuable notes and opinions, the former from Sussex and Surrey, and the latter from Angus. Indeed, without their help this paper would never have been written.

The numbers and letters preceding the names indicate the positions they should occupy in the sequence adopted in "Rev. Brit. Roses," the interpolated varieties or forms having either an advance of letter or the addition of (1), (2), etc., after the present one. New hybrids are indicated by a capital letter after the numeral.

3A. ×**R. debilis** hyb. nov. *R. arvensis* × *canina* ?—Aculeis paucis, parvis, rectis, basi elongatis; foliolis plerumque 5, parvis, ovatis, subobtusis, satis grosse serratis in ratione magnitudinis, in nervo medio pubescentibus; petiolis satis leviter pubescentibus, eglandulosis; pedunculis solitariis, longis, laevibus; fructibus parvis, ovoideis, plerumque male formatis aut abortivis; sepalis integris.

Prickles few, small, straight, with long bases; leaflets usually five, small, ovate, subobtuse, rather coarsely serrate for their size, pubescent on the midribs; petioles thinly pubescent, not glandular; peduncles solitary, long, smooth; fruit small, ovoid, commonly ill-formed or abortive; sepals entire.

This hybrid was found on Dunsfold Common by E. B. Bishop. Keller said it was clearly a hybrid, but felt some uncertainty as to the *canina* parentage. Except for its ill-formed fruit it might pass for a small form of f. *laevipes*.

Several other hybrids of *R. arvensis* have been found on Chiddingfold and Horsell Commons, both in Surrey, differing in many respects from both *R. debilis* and ×*R. Wheldoni*, but they do not present very definite characters by which they can be described, except that they are more or less intermediate between *R. arvensis* and other species, and are barren. Besides *R. canina*, Keller has suggested *dumetorum* and *systyla* as parents, but it is better for the present to consider them as forms of ×*R. debilis*, leaving them otherwise unnamed.

4A. ×**R. rufescens** hyb. nov. *R. stylosa*, var. *systyla* × *dumetorum*. Generaliter ut in *R. dumetorum*, sed foliosis quinque, satis parvis, subtus per totam laminam pubescentibus, supra glabris subglabrisve, junioribus stipulisque interdum rufescentibus; pedunculis solitariis, satis longis, leviter breviterque glandulosis; fructibus anguste ovoideis, frequenter male formatis abortivisve; sepalis satis longis, valde pinnatis; stylis ut in var. *systyla*, in disco conico.

General characters of *R. dumetorum* but leaflets five, rather small, pubescent all over beneath, glabrous or subglabrous above, the young

ones and the stipules sometimes suffused with red; peduncles solitary, rather long, finely hispid; fruit narrowly ovoid, but usually ill-formed or abortive; sepals rather long, and strongly pinnate; styles like those of var. *systyla*, on a conical disc.

Found by Mrs Wilde on Chiddingfold Common, and named by Keller, but with some slight expression of doubt as to the parentage, though his determination is quite acceptable.

Another form, possibly of the same hybrid, found on Dunsfold Common, differs from var. *systyla* in no respect except in some degree of barrenness of the fruit, which in itself is not proof of hybridity.

9A. ×**R. setonensis** hyb. nov. *R. spinosissima* × *coriifolia*, var. *Watsoni* ? Aculeis paucis et parvis, leviter curvatis, aciculis relative paucis; foliosis parvis, late ovatis, breviter acutis aut apice rotundatis, biserratis, supra glabris subglabrisve, subtus ad costam et nervis primariis satis leviter pubescentibus, eglandulosis; petiolis leviter pubescentibus; fere eglandulosis; pedunculis solitariis, laevibus, aut rarius parce hispidis; fructibus subglobosis, laevibus, frequente male formatis; sepalis erectis aut patento-erectis, haud longe persistentibus, integris aut paucis pinnis munitis, dorsis haud multo glandulosis.

Prickles few and small, slightly curved, acicles comparatively few; leaflets small, broadly ovate or rounded at the apex, biserrate, glabrous or subglabrous above, rather thinly pubescent on midrib and primary nerves beneath, eglandular; petioles slightly pubescent, almost eglandular; peduncles solitary, smooth or rarely slightly hispid; fruit subglobose, smooth, often ill-developed; sepals erect or spreading-erect, not long persistent, entire or with few pinnae, not much glandular on the backs.

This hybrid, which was gathered by Dr G. Taylor at Port Seton, Haddington, is without doubt the same as that distributed by Barclay as *R. hibernica* Sm. (*R. pimpinellifolia* × *coriifolia*, var. *Watsoni*) and may have been gathered from the same bush (see W.E.C. 1911-12 Rep., 337-8, with a long note). I had placed my own specimen from Barclay under ×*R. laevigata* Baker, with the description of which it closely agrees, but it has very different prickles. There is also considerable agreement with Baker's description of his *R. celerata*. It is quite distinct from ×*R. cantiana*, which also grows at Port Seton.

16. ×R. Wilsoni (Borr.) W.-Dod. Good forms of this hybrid have been found in Angus, and I have seen it from North Northumberland, Haddington, and Derry, which discounts the suggestion that it is derived from *R. tomentosa*, var. *scabriuscula*, f. *Leesii*, see *Rev. Brit. Roses*, p. 19.

25i. γR. canina, var. dumalis, f. cladoleia (Rip.) W.-Dod. Keller has given the name of var. *dumalis*, f. *acrophylla* R.K. to a specimen from Elstead Common, Surrey. He subdivides the Dumales to a much greater extent than I do, and characterises his f. *acrophylla* by its narrower leaflets and fruit, which this specimen shows, but it is too near

f. *cladoleia* to segregate from it, so I do not propose to adopt the name.

25t. R. CANINA, var. VERTICILLACANTHA Baker. A form of this variety with spreading or spreading-erect sepals was gathered by Bishop on Dolley's Farm, Horsell. Keller regards the rising sepals as an indication that it is a *Subcanina* form, disregarding the absence of woolly styles or other characteristics of that group, and says it is near his var. *Kummeri*, a name he has before suggested for a specimen from Gloster, and two or three from the Highlands. The Horsell plant has somewhat densely hispid styles, though not characteristic of any *Afzeliana* variety, which, moreover, are very rare in the south-east counties, and not to be included except on the very best evidence, which is lacking here. It agrees in many respects with Keller's description of var. *Suberti* Rip., but not with that of its author in some important particulars, and that is not certainly a British variety. The Horsell plant must go as a form of *verticillacantha* with rising sepals. It is noteworthy that Keller wrongly describes the styles of var. *verticillacantha* as being glabrous or subglabrous.

25t. β R. CANINA, var. VERTICILLACANTHA, f. CLIVICOLA Rouy. A specimen from near Dundee was referred by Keller to *R. canina*, var. *adenocalyx*, f. *glaucophylla* R.K. (non Winch), but that form seems to be so near f. *clivicola* that it is not desirable to add it to our list. Moreover, the specimen is more probably one of the Subcaninae, and may be regarded as a small-leafleted var. *pseudo-Haberiana*, but without any form name.

25t. γ R. CANINA, var. VERTICILLACANTHA, f. LEMAITREI (Rip.) W.-Dod. A form of this from Torberry Hill, West Sussex, is referred by Keller to his form *arezzensis*, which differs from f. *Lemaitrei* mainly in its more lagenoid fruit, a feature not at all obvious in the specimen, so the name is not adopted.

25 and 29. R. CANINA and R. DUMETORUM forms are more frequent in the southern Highlands of Scotland than has been supposed, but north of Argyll, Perth and Angus are usually replaced by *Afzeliana* and *coriifolia*, though *R. dumetorum*, f. *semiglabra*, is known in two or three stations in Orkney.

29. R. DUMETORUM Thuill. Keller's latest arrangement of this species differs slightly from that of Keller and Gams, referred to in *Rev. Brit. Roses*, pp. 25 and 45. He makes *R. canina* L. an aggregate species with three subspecies of equal value, *R. Pouzini* Tratt., *R. vulgaris* Gams (*R. canina* auct. plur.), and *R. dumetorum* Thuill. He does not use the name of *R. dumetorum* as a segregate at all, that is to say, he has no typical variety, but divides the aggregate into three main groups, with leaflets simply, irregularly, and doubly serrate. The first group is the largest one, its first subgroup, namely those with smooth peduncles and leaflets pubescent beneath only, being headed by var.

platyphylla (Rau) Chr., with 32 forms; the subgroup with leaflets pubescent on both sides being collected under var. *Thuilleri* Chr. (regarded by some as the type), having four minor varieties and 18 forms.

A difficulty arises in attempting to correlate British and Continental varieties on account of Keller having ignored Rau's description of the leaflets of var. *platyphylla* being biserrate towards the tip, a character also usually disregarded by British botanists. Many examples of the forms and varieties associated with this in Britain have either simple or very slightly double serration.

Another difficulty is due to Keller's use of Ripart's ambiguous *hispidula* in the simply serrate group, as the leading variety of a small subgroup having leaflets glabrous above, but with hispid peduncles. This covers var. *incerta* Déségl., a much less ambiguous name and more suitable to stand at the head of the group. Keller uses the name of var. *hispidula* Rip. in both *R. canina* and *R. dumetorum*, but this confusion need not have arisen had he not admitted pubescent midribs into his *R. canina*. Var. *Deseglisei* comes in another subgroup by reason of its leaflets being pubescent on both sides.

The group with biserrate leaflets is headed by var. *hemitricha*, which is proving to be a considerable one in Britain. When its leaflets have subfoliar glands it becomes my subgroup Mercicae, and forms a link with *R. obtusifolia*, var. *sclerophylla*, under which further remarks will be found.

29b. *β* R. DUMETORUM, var. RAMEALIS, f. URBICOIDES (Crép.) Braun. Keller gives the name of f. *urbicoides* to forms of *urbica* with leaflets narrowed at the base and oblong fruit, but makes no mention of var. *ramealis* (Pug.). He considers that a South Devon specimen may be placed here. I propose to retain the name of var. *ramealis* for the obovoid or oblong-fruited varieties of *R. dumetorum*, when the leaflets are more or less rounded at the base, those with them narrowed at the base now being referred to f. *urbicoides*. I associate other S. Devon forms with the one seen by Keller, which was gathered by Moyle Rogers, also specimens from West Gloster, Hereford, Oxford, and Hunts, all of which I had placed under var. *ramealis*, which now seems to be rarer than its form *urbicoides*.

29g. *β* R. DUMETORUM, var. HEMITRICHA, f. BALTICA Holzf. For some time var. *hemitricha* has been the only name used in Britain for all decidedly biserrate varieties of *R. dumetorum* with smooth peduncles and no subfoliar glands, but on the Continent there is a large number of both irregularly serrate and fully biserrate varieties and forms. The former are Keller's group Transitoriae (which he maintains in *R. dumetorum* and in other species as well as in *R. canina*) and are headed for the most part by var. *subglabra* (Borb.), covering certain others such as *trichoneura* Rip., *jactata* Déségl., *submitis* Gren., etc., and if Rau's description be adopted, his var. *platyphylla* must be included. Some of these names appear in the British list as synonyms, and it is not pro-

posed at present to disturb this arrangement, but the group is in need of revision.

The name of f. *baltica* Holzf. must be adopted for the forms with strong glandular biserration. It has been suggested by Keller for some Scottish examples, and may be widespread, though no doubt many intermediate forms are to be found.

29i. β R. DUMETORUM, var. DESEGLISEI, f. ROHRERI R. Kell., has been published by E. B. Bishop in B.E.C. 1934 Rep., p. 902, as a name to cover forms of the variety with very large leaflets, large elongate fruit, and glabrous styles. It was found on Witley Common, and Keller at first proposed the name of f. *Othmarii* R.K. for it, to which he said it made a very close approach, but since its leaflets are obviously pubescent above as well as beneath, it is better under the very closely allied f. *Rohreri*.

29l(1). R. DUMETORUM, var. FANASENSIS R. Kell. When forms allied to var. *hemitricha* have very strong biserration they may develop subfoliar glands, which take them into my group Mercicae. This group name is not used by Keller, but he has three varieties with subfoliar glands, *fanasensis*, *Carionii* (Déségl. & Gill.), and *villosula* (Paill.). Of these the last two have broadly oval or even suborbicular leaflets, while his *fanasensis* has them rather narrow and often much narrowed at the base, and is therefore the best name for our forms. They are characterised also by the leaflets being more or less pubescent both sides, usually though not always with subfoliar glands, at least on some leaflets, and elongate glabrous styles, but with pilose stigmas.

I refer to var. *fanasensis* R.K. specimens from Grayswood, Surrey, and two gatherings from north-east Yorks by Dr Taylor. None of the three is quite characteristic, the Surrey one having hispid styles, and the two Yorkshire ones shortly ovoid fruit, but there is no nearer name.

Keller remarks on the affinity of his variety and some allied forms with *R. obtusifolia*, no doubt through var. *sclerophylla*, and indeed it is most difficult to define cardinal characters by which they can be segregated specifically. (See also under *R. obtusifolia*, var. *sclerophylla*).

The introduction of var. *fanasensis* into our list necessitates an alteration in the definition of group Mercicae, by the excision of the words "peduncles glandular-hispid," since they are smooth in that variety.

31e. R. AFZELIANA, var. SUBCANINA Chr. Keller has referred a Chelsfield, Kent, specimen to his var. *criostyla*, but with some doubt, since its sepals had fallen, though that very character is a leading feature of the Subcaninae. Keller, however, does not use this as a group character, and moreover distinguishes *criostyla* from *subcanina* by its woolly styles, disregarding the fact that those of *subcanina* itself are woolly. His treatment of the group is not on parallel lines to ours, so I do not propose to adopt the name of *criostyla*. The specimen is quite distinct from Groves's much disputed "var. *Crepiniana*" from Chelsfield, which Keller thinks is a *subcanina* form.

31e. β R. Afzeliana, var. subcanina Chr., f. latifolia, forma nova —Foliolis magnis latisque, usque ad 35 mm. longis et 25 mm. latis, minoribus ratione similibus, frequenter truncatis vel etiam basi emarginatis; fructibus magnis, subglobosis; pedunculis stylisque ut in varietate.

Leaflets large and broad, up to 35 mm. long by 25 mm. broad, the smaller ones with the same proportions, commonly truncate and even quite emarginate at the base; fruit large, subglobose, with the peduncles and styles of the variety. It was found by Col. Johnston in two stations at Hoy, Orkney. It has so distinctive an appearance that I have founded a new form on it, in spite of its restricted distribution.

31h. R. Afzeliana, var. Kummeri R. Kell. This is a name proposed by Keller for certain plants from Angus, Gloster, and Surrey. The Angus specimens differ so little from var. *pseudo-Haberiana* that it is not desirable to give them a separate name. Even the description of var. *Kummeri* indicates no important feature, so it is not adopted. The Surrey plant is referred to under *R. canina*, var. *verticillacantha*.

31k. R. Afzeliana, var. Briqueti R. Kell. This variety, which is mentioned on p. 105, *Rev. Brit. Roses*, has been found in several Angus stations, also in Cumberland, N.E. Yorkshire, Derby and Warwick. The Warwick specimen is one of two from herb. Groves, labelled Nos. 1 and 2, *R. marginata*. No. 1 is *R. canina*, var. *Blondaeana*, f. *vinacea*, while Keller refers No. 2 to a new form of *R. Afzeliana* (Subcaninae), var. *clivicola* Rav. (non Rouy), but he overlooks the subfoliar glands which make it var. *Briqueti*, of which it is a very small-leafleted form.

Keller thought one of the Angus specimens was *R. Afzeliana*, var. *glandulifera* R.K., f. *mixta*. He never published the form name, and his var. *glandulifera* has smooth peduncles, those of var. *Briqueti* being hispid.

32a(1). R. coriifolia, var. subglabra R. Kell. There has been a lack of suitable names in the British list for the less pubescent leaved varieties and forms of the type. Hitherto we have used *R. coriifolia*, var. *typica* Chr., for those with simple serration, smooth peduncles and leaflets pubescent on both sides, with f. *frutetorum* as a form with very slight biserration, and f. *implexa* for those with leaflets glabrous above and subglabrous beneath. A better arrangement is to make use of Keller's var. *subglabra* for all those which are glabrous above and more or less pubescent beneath. The variety normally has subglobose fruit and may run into two forms, f. *subobovata* Rouy in which it is ovoid or ellipsoid, and f. *implexa* (Gren.) when it is subglobose but the pubescence confined to the midribs only.

Examples which may be placed to var. *subglabra* have been identified from Mid-Perth, North-west Yorks, Cheshire, Salop, Stafford, and Derby, while f. *subobovata* has been found in South Northumberland, North-west and Mid-west Yorks. Some, but not all of these, have been named by Keller, and others have been previously referred to var. *typica*

or to f. *implexa*. It will probably be found that var. *subglabra* is our commonest variety.

32. Group SUBCOLLINAE. This has always been a difficult group in Britain, except for var. *subcollina* Chr. itself and var. *caesia* (Sm.), both of which are treated by Keller on quite different lines to the British idea of them. None of its varieties in our list appear in Keller's "Synopsis," so that his names are not easily correlated with the British ones. The following five varieties and two forms will, it is hoped, help to bring our list more into agreement with the Continental one, though its prolongation may be regrettable. The first two forms, for example, are found mainly upon the distribution of the pubescence on the leaflets, which is a variable feature, but is always taken cognisance of in other species and varieties. It must be borne in mind that the whole species of *R. dumetorum* and *R. coriifolia* may be regarded as two series of pubescent-leaved varieties of *R. canina* and *R. Afzeliana* not as species, though some individual varieties in each may have no precise parallel in the others.

32f. β R. CORIIFOLIA, var. SUBCOLLINA, f. DIMORPHOCARPA (Borb. & Br.) R. Kell. As with *R. coriifolia* typica, so with var. *subcollina*, names have been lacking to cover the variation of leaf pubescence. Var. *subcollina* has them glabrous above and pubescent only on the midribs or also primary nerves beneath. Keller names specimens with pubescence all over the under surface, f. *dimorphocarpa*, but up to the present this has only been identified from Angus, though it is most probably more frequent than typical var. *subcollina*.

32f. γ R. CORIIFOLIA, var. SUBCOLLINA, f. INCANA (Kit.) R. Kell. non auct angl. In this form the leaflets are pubescent on both surfaces. The plant referred to in W.E.C. 1931-2 Rep., 123, from Dunsfold Common, belongs here. A later gathering of it was referred by Keller to his var. *lophophyton*, but that differs so slightly that it is almost synonymous. Specimens from Elgin, Mid and East Perth, and Stafford also belong here, and a specimen from Cumberland by C. Bailey labelled "*R. caesia* Sm., approaching *Watsoni* Baker," probably belongs here also. It is likely to be as common or commoner than either typical var. *subcollina* or f. *dimorphocarpa*. It is quite distinct from var. *incana* Woods, which is an obscure form of var. *caesia* Sm.

32f(1). R. CORIIFOLIA (Subcollinae), var. PASTORALIS R. Kell. Keller gives this name, with certain reservations, to a specimen from Letham, Forfar, with large, coarsely, almost simply serrate leaflets, pubescent below and slightly so above, and hispid pedunculs. The only fruit on the specimen is ovoid-subglobose, instead of "pyriform and narrowed into the pedunculs" as described, but otherwise it agrees fairly well with its description. The name may be used for hispid-pedunculed varieties of the Subcollinae with simply or subsimply serrate leaflets, pubescent on both sides.

32g(1). R. CORIIFOLIA (Subcollinae), var. HAUSMANNII Braun. The names of the British biserrate varieties of the Subcollinae have always been in some confusion. Barclay's var. *subcoriifolia* is admittedly an aggregate, and covers forms with or without hispid peduncles and subfoliar glands, and with varying pubescence on the leaflets, but its author was strict in confining it to forms with ovoid-pyriform or obovoid fruit. The position of var. *Lintoni* is ambiguous, Schentz having described its sepals as erect-patent, which would make it one of the Coriifoliae Typicae, while specimens from the original bushes have them all spreading-reflexed, or at most spreading, which is characteristic of the Subcollinae. Baker's *pruinosa* is a mixture of smooth and hispid-peduncled forms, varying greatly in leaflets and fruit, while his *obovata* is a rare and local form. None of these names are used by Keller nor on the Continent generally, so that a direct comparison of our own and European forms is difficult.

Keller uses the name of var. *Hausmannii* for varieties of the Subcollinae having decided but not strong, and sometimes even quite weak biserration, the leaflets being subglabrous above and pubescent all over beneath, with no subfoliar glands, and smooth peduncles. It comes nearest to var. *pruinosa* in our list, but lacks its strong biserration and broad or even subcordate bases to the leaflets. Specimens from Angus, East, West and Mid Perth, South Aberdeen, Durham and North Yorks may be placed here. Keller had proposed the name of var. *Aschersoni* R. Kell., f. *ploenensis* R.K., for the North Yorks specimen, but that is merely a rather more biserrate form which may be regarded as synonymous. This last name has also been suggested by Keller for a specimen from Angus, which is almost certainly a *dumetorum* form of var. *hemitricha*, f. *baltica*.

32g(1). *β* f. CASTRENSIS Schwertsch. is a suitable name for a very globose-fruited form from Angus.

32h. *β* R. CORIIFOLIA (Subcollinae), var. SUBCORIIFOLIA Barcl., f. PERPUBESCENS, f. nov. Generaliter ut in *subcoriifolia*, sed foliolis utrinque pubescentibus, haud subtus solum, cum glandulis subfoliaribus; pedunculis laevibus.

General characters of var. *subcoriifolia* Barcl., but with leaflets pubescent on both sides instead of beneath only, with subfoliar glands, and with smooth peduncles. Gathered by Mrs Corstorphine at Loch Fithie, Angus. Its elongate fruit at once distinguishes it from var. *Wilczekii*. A similar form from the Pass of Leny, Mid Perth (Barclay, No. 182), was labelled by him var. *subcoriifolia*, from which it differs in the pubescence on the upper surface of the leaflets. A specimen from Strath Tay probably also belongs here.

32j(1). R. CORIIFOLIA, var. WILCZEKII R. Kell. This name may be used to cover forms of the Subcollinae which have biserrate leaflets, not rounded or subcordate at the base, glabrous above, pubescent beneath, with subfoliar glands, smooth peduncles, and subglobose or broadly ovoid

fruit. It differs from *subcoriifolia* essentially in the form of its fruit, and from Baker's very indefinite var. *pruinosa* in the shape of its leaflets and their subfoliar glands. From var. *Lintoni* it differs in its sepals being definitely reflexed and its leaflets glabrous above. It has been named by Keller from several stations in Angus.

32j(2). R. CORIIFOLIA (Subcollinae), var. HOFMANNII R. Kell. A specimen gathered in 1931 at Dale Head, Cumberland, has hitherto been without a name. Keller thought it near *R. subcanina*, var. *bovonnazensis*, saying that its leaflets were pubescent on the midribs only, which for him would have made it one of the Subcaninae, but those of the Dale Head specimen are very obviously pubescent all over the lower surface, which places it in the Subcollinae. A much more suitable name is var. *Hofmannii* R.K., which for the present may be taken to cover biserrate Subcollinae, with leaflets pubescent all over beneath, no subfoliar glands, and hispid peduncles. It usually has a broadly ovoid slightly hispid fruit, but no other special feature. it has not been identified elsewhere in Britain.

32l. R. CORIIFOLIA (Subcollinae), var. PAICHEANA R. Kell. There has been a suggestion of the existence of this variety in Britain, see *Rev. Brit. Roses*, p. 69, but the specimens were too uncertain to allow its adoption. A specimen from Wythrop, Cumberland, found by Miss Todd, agrees quite well with Keller's description, so it may be definitely recorded for Britain. It is marked by its biserrate leaflets, glabrous above and pubescent mainly on the nerves beneath with subfoliar glands, and hispid peduncles. The fruit is broadly ovoid and typically should be subglobose. The specimen has not been seen by Keller. It is near var. *Hofmannii*, but that has no subfoliar glands. Its hispid peduncles distinguish it from vars. *Hausmannii*, *Wilczekii*, and *Lintoni*, its narrower much less pubescent leaflets with subfoliar glands from *pruinosa*, and its subglobose fruit from var. *subcoriifolia*.

34A. ×**R. subobtusifolia** hyb. nov. *R. obtusifolia*, var. *decipiens* ×*canina*. Aculeis robustis, arcuatis, declinatisve, in ramis numerosis magisque uncinatis; foliolis plerumque quinque, parvis, late ovalibus, ad basim latissimis, breviter acutis, biserratis, utrinque pubescentibus, supra satis obscure, petiolis dense pubescentibus, satis dense glandulosis; pedunculis solitariis, circa 12 mm. longis, parce aut satis glandulosis; fructibus parvis, late ovoideis si bene formatis, plerumque autem abortivis, tunc angustis; sepalis reflexis, pinnis latis ferentibus; stylis exsertis, hispidis.

Prickles stout, arcuate or declining, those on the branches numerous and more uncinate; leaflets usually five, small, broadly oval, very broad at the base, shortly acute, biserrate, pubescent on both sides, rather obscurely so above; petioles densely pubescent, considerably glandular; peduncles solitary, about 12 mm. long, weakly or moderately hispid; fruit small, broadly ovoid when well formed, but mostly abortive and then narrow; sepals reflexed, with broad pinnae.

Found by W. Biddiscombe near Dolley's Farm, Horsell, and referred to this parentage by Keller. The foliage is like that of a biserrate *obtusifolia* and it is probable that var. *decipiens* is one of the parents, while the other is equally likely to be *R. canina* or *R. dumetorum*. In general appearance it closely resembles ×*R. concinnoides*, but that is simply serrate. It differs from ×*R. surreyana* chiefly in its much smaller leaflets, though otherwise the two hybrids show no important differences. ×*R. bickertonensis* bears a much closer resemblance to ordinary var. *tomentella*, while ×*R. tomentelliformis* is abundantly distinct.

37b. ε R. VILLOSA, var. MOLLIS, f. ANNESIENSIS (Déségl.) R. Kell. This is a suitable name for a form of var. *mollis* gathered at Dalmeny, Linlithgow, by G. Taylor. It is in all respects similar to var. *mollis* but has ovoid-ellipsoid fruit. Specimens from Lanark and Orkney may also belong here. Keller has given the name of *R. villosa*, var. *pomifera*, f. *lagenoides*, to forms with similar fruit, but with larger though hardly parallel-sided leaflets, but since the specimens were taken from a small tree, not a bush, his identification is no doubt correct. They were found in Angus.

43c. β R. TOMENTOSA, var. DUMOSA, f. SAGOTI Rouy. Keller thinks that a small scarcely biserrate-leafleted form of *dumosa* with small fruit from the High Tor, Matlock, ex hb. Groves, is nearest to this. His note suggests that he thinks it does not quite match it, but it is nearer to his description of f. *Sagoti* than to two other allied small-leafleted forms, and I think may be accepted for our list.

Two other sheets from hb. Groves, also from the High Tor, were labelled Nos. 1 and 2, without any suggestion of a name. They are in many respects much like f. *Sagoti*, especially in their small very slightly biserrate leaflets. The fruit, however, is small, subglobose, and often barren, in clusters of two to six, on short peduncles. Keller thinks they are hybrids, no doubt with *Sagoti* as one parent, but the other is quite undeterminable, perhaps some *canina* or *dumetorum* form.

43f. β (1) R. TOMENTOSA, var. SCABRIUSCULA, f. GISLERI (Pug.) R. Kell. This is a suitable name for the Rose sent by Miss Roper to the Bot. Exch. Club as *R. tomentella*, var. *decipiens*, from Llanberis, see Rep. for 1931, 827. Keller named the specimen *R. abietina* Gren., without any qualification, but that species is not yet definitely established as British. The name of *R. abietina* appears in one form or another as a synonym of several varieties, even in different species, in Boulenger's "Roses d'Eur.," and he says it lies between *R. obtusifolia* and *R. canina*, though with an association with *R. tomentosa*. He thought my *R. dumetorum*, var. *mercica*, was a form of *R. abietina*. Miss Roper's specimen agrees very well with Keller's description of f. *Gisleri*, and since both he and Boulenger say that that form is a variety of *R. abietina*, his opinion seems to be met. It may be regarded as a connecting link between ordinary *scabriuscula* and its forma *foetida*, hav-

ing narrower leaflets than the latter, with fewer less conspicuous subfoliar glands.

45A. ×**R. Burdoni** hyb. nov. *R. tomentosa* × *rubiginosa*. Aculeis suberectis, leviter declinatis aut subarcuatis, in ramulis floriferis paucissimis aciculis mixtis, foliolis ovalis, acutis, valdissime glanduloso-biserratis, utrinque tenuiter pubescentibus, subtus tenuiter glandulis obtectis; pedunculis solitariis, glanduloso-aciculatis; fructibus anguste ovoideis, in toto abortivis, tectis ut in pedunculis; sepalis patentibus, subpersistentibus, dense glandulosis aciculatisque; stylis hispidis, nec dense.

Prickles straightish, slightly declining or subarcuate, mixed with a very few acicles on the flowering branches; leaflets oval, acute, strongly glandular-biserrate, thinly pubescent on both sides, and slightly glandular beneath; peduncles solitary, glandular-aciculate; fruit narrowly ovoid but wholly abortive, clothed as on the peduncles; sepals spreading, subpersistent, densely glandular and aciculate; styles hispid, but not densely so.

This hybrid was gathered by Preb. R. J. Burdon, near Ashiestiel, Selkirk, and sent to the Wats. Exch. Club in 1930. The parentage is agreed to by Keller.

A very unusual form or hybrid of *R. tomentosa* was found by J. Groves at King's Quay, I. of Wight. Keller thinks it is certainly a hybrid, and probably with *R. spinosissima*, but except for a little heteracanthy, there is little suggestion of that species. Otherwise, except for a marked reduction on fertility, it might well be one of the Seabriusculae allied to f. *foetida*. It is too ill-defined to describe as a new hybrid.

46a. R. RUBIGINOSA L. A small-leaved form, remarkable for the entire absence of heteracanthy below the inflorescence, was gathered by Dr G. Taylor at Nairn Links. It seems to be near var. *macrostylis* Schwertsch., but I do not propose to introduce this name to the British list, and leave the specimen under var. *typica*.

46c. R. RUBIGINOSA, var. ECHINOCARPA (Rip.) Gren. A specimen from Strath Tay, Perth, had better go here. Keller suggested the name of var. *umbellata* (Leers) Dum., f. *dimorphacantha* (Mart.) Borb., for it, but his treatment of var. *umbellata*, f. *echinocarpa*, and f. *dimorphacantha* shows that there is very little difference between them, and it is not advisable to introduce this new name to the British list, leaving it as var. *echinocarpa*. Strictly speaking, this variety should have a roundish-ovoid fruit, but specimens named by Ripart himself, as well as all British forms referred to it, have it quite ovoid or even ellipsoid.

46A. ×**R. molliformis** hyb. nov. *R. rubiginosa* × *villosa*, var. *mollis*. Aculeis rectis, tenuibus, sub inflorescentia aciculis haud mixtis; foliolis frequenter 5, approximatis, magnis, suborbicularibus, utrinque satis dense pubescentibus, glandulis subfoliaribus dense tectis; pedunculis 1-3, satis brevibus, glanduloso-aciculatis; fructibus subglobosis,

parce aciculatis, frequenter male formatis; sepalis valde acieulatis glandulosisque, suberectis, moderate pinnatis; stylis lanatis.

Prickles straight, slender, without acicles beneath the inflorescence; leaflets usually 5, close-set, suborbicular, rather densely pubescent both sides, with copious subfoliar glands; peduncles rather short, glandular-aciculate; fruit subglobose, thinly aciculate, often ill-formed, sepals densely aeiculate and glandular, subereet, moderately pinnate; styles woolly.

A very good intermediate, hitherto only found by Miss Todd in Inverness.

47a. γ R. MICRANTHA, var. TYPICA Chr., f. VISCIDA (Pug.) Rouy. Keller arranges the bulk of his varieties of *R. micrantha* in two groups, those with leaflets glabrous or pubescent on midribs beneath only, and those which are pubescent all over the lower surface. Christ's var. *typica* comes under the latter group while Rouy's var. *normalis* is under the former, which somewhat upsets the British arrangement, and if adopted would necessitate the renaming of many of the speeimens. Keller thinks that var. *normalis* Rouy is the commonest variety of the group with subglabrous leaflets, but I propose to place f. *viscida* Rouy (which is really a form of *normalis*) under var. *typica*. It is represented by a plant from Banstead Downs, Surrey, and has very small, subglabrous leaflets. Much of our var. *Lemanii* has leaflets equally small, but in the latter they are much narrower and sometimes pubescent all over the backs, which would remove them from Keller's group headed by var. *normalis* Rouy, in which he places *Lemanii*.

47g. R. MICRANTHA, var. BURGESSI Bishop, in B.E.C. 1933 Rep., pp. 468-471. Whole plant suffused with red. Leaflets slightly pubescent on midribs beneath only; fruit elongate-ovoid; styles very woolly; petals deep rose.

Hybrids of *micrantha*, etc. There appear to be more hybrids in West Sussex between *R. micrantha*, *R. agrestis*, and *R. canina* than there are described in *Rev. Brit Roses*, pp. 99 and 106, but it is most diffieult to assign a definite parentage to any of them, or to write descriptions which would enable them to be recognised when found. They must be reserved for future study.

Since it may not be clear from the above notes whieh varieties and forms have been adopted for the British list, the following is a brief summary of sueh additions:—

× **R. debilis** hyb. nov. *R. arvensis* × *canina*. With intermediate characters, but leaflets and fruit (which is barren) small.

× **R. rufescens** hyb. nov. *R. stylosa*, var. *systyla* × *dumetorum*. Like a small-leaved *dumetorum*, with the peduncles and styles of *systyla*. Fruit ill-formed.

×**R. setonensis** hyb. nov. *R. spinosissima* × *coriifolia*, var. *Watsoni*. Intermediate characters with very little glandular development, peduncles and sepals nearly smooth. Fruit commonly barren. Sepals suberect, not long persistent.

R. DUMETORUM, var. RAMEALIS, f. URBICOIDES (Crép.) Br. Like var. *ramealis* but with leaflets decidedly narrowed at the base.

R. DUMETORUM, var. HEMITRICHA, f. BALTICA Holzf. Strongly biserrate.

R. DUMETORUM, var. DESEGLISEI, f. ROHRERI R.K. See B.E.C. 1934 Rep.

R. DUMETORUM, var. FANASENSIS R. Kell. Like *hemitricha* with s.f. glands.

R. AFZELIANA, var. SUBCANINA, f. LATIFOLIA, f. nov. Very large leaflets and large subglobose fruit.

R. CORIIFOLIA, var. SUBGLABRA R. Kell. As in var. *typica* but leaflets glabrous above. Fruit subglobose.

R. CORIIFOLIA, var. SUBGLABRA, f. SUBOBOVATA Rouy. Fruit ovoid or ellipsoid.

R. CORIIFOLIA, var. SUBCOLLINA, f. DIMORPHOCARPA (Borb. & Br.) R. Kell. Leaflets pubescent all over beneath.

R. CORIIFOLIA, var. SUBCOLLINA, f. INCANA (Kit.) R. Kell. Leaflets pubescent both sides.

R. CORIIFOLIA (Subcollinae), var. PASTORALIS R. Kell. Leaflets simply serrate, pubescent on both sides, peduncles hispid.

R. CORIIFOLIA (Subcollinae), var. HAUSMANNII Br. Leaflets moderately biserrate, pubescent all over beneath. No subfoliar glands. Peduncles smooth.

R. CORIIFOLIA (Subcollinae), var. HAUSMANNII, f. CASTRENSIS Schw. Fruit globose.

R. CORIIFOLIA (Subcollinae), var. SUBCORIIFOLIA, f. PERPUBESCENS, f. nov. Leaflets pubescent on both sides.

R. CORIIFOLIA (Subcollinae), var. WILCZEKII R. Kell. Like *pruinosa* but narrower leaflets with subfoliar glands.

R. CORIIFOLIA (Subcollinae), var. HOFMANNII R. Kell. Leaflets biserrate, pubescent all over beneath, no s.f.g., peduncles hispid.

R. CORIIFOLIA (Subcollinae), var. PAICHEANA R. Kell. Near var. *Hofmannii* but with subfoliar glands.

×**R. subobtusifolia** hyb. nov. *R. obtusifolia*, var. *decipiens* × *canina*. Like a biserrate ×*R. concinnoides*.

R. VILLOSA, var. MOLLIS, f. ANNESIENSIS (Déségl.) R. Kell. Fruit ovoid-ellipsoid.

R. TOMENTOSA, var. DUMOSA, f. SAGOTI Rouy. Leaflets and fruit small.

R. TOMENTOSA, var. SCABRIUSCULA, f. GISLERI (Pug.) R. Kell. Like a narrow-leafleted f. *foetida* with fewer subfoliar glands.

×**R. Burdoni** hyb. nov. *R. tomentosa* × *rubiginosa*. Just intermediate, with thinly pubescent leaflets, hispid styles and abortive fruit.

×**R. molliformis** hyb. nov. *R. rubiginosa* × *mollis*. Characters intermediate.

R. MICRANTHA, var. TYPICA Chr., f. VISCIDA (Pug.) Rouy. As in type but leaflets very small and subglabrous.

SOLANUM DULCAMARA AND ITS INFLORESCENCE.

W. B. Turrill.

Solanum Dulcamara is a common and rather polymorphic species with a wide distribution in the East North Temperate Zone. According to Druce (*Comital Flora*, 211, 1932) it is recorded for all the vice-counties of Great Britain, except the northern and some of the western Scottish ones and Linlithgow (for all but 84, 98, 101, 103-105, 107-112). It occurs, in one or other of its variations, from the sea-coast to 1000 feet altitude (" just reaching 1000 in Weardale "—Wilson: *The Altitudinal Range of British Plants*, 59, 1931). Its known variations include characters of habit, leaf-shape (including segmentation and lobing), foliage colour, indumentum of vegetative parts, inflorescence branching, corolla colour, and fruit shape, size, and colour. Some of these variations are definitely correlated with habitat, as for example the so-called variety *marinum* Bab. Others are of frequent or infrequent, more or less sporadic occurrence throughout the distributional area of the species. Their genetical behaviour and ecological correlations require detailed study. Turesson (*Hereditas*, iii, 230, 1922) records different hereditary types within the species.

No full published account of the structure of the inflorescence and its variations in *S. Dulcamara* has been traced. Botanical literature is so voluminous, so scattered, and so largely unclassified that relevant papers may well have been overlooked. A considerable amount has been published concerning the inflorescences of other solanaceous plants, some of it, as is shown below, being unintelligible. It has been held by most authors that the pairing of leaves in the flowering parts is " an arrangement which, like the extra-axillary position of the flowers or cymes, is the result of congenital union of axes " (Rendle, *The Classification of Flowering Plants*, ii, 516, 1925). In modern botanical textbooks one usually finds that the writers have little new evidence to offer for the validity of highly ingenious hypotheses masquerading as morphological interpretations of inflorescence structure. Diagrams supposed to show the position of leaves and flower-branches in *Datura Stramonium*, *Atropa Belladonna*, and *Solanum nigrum* have been copied (sometimes not even accurately) from Eichler's *Blüthendiagramme*, i, 200, fig. 117 (1875). Eichler's ideas were partly taken from the earlier publications of Wydler, one of whose papers, in *Flora*, xl (Neue Reihe, xv), 225 (1857), most nearly concerns us here.

It would take too much space to analyze in detail Wydler's and Eichler's accounts of the inflorescence in the Solanaceae, but some criticisms of their interpretation of the inflorescence of *Solanum nigrum* may, perhaps, persuade some reader to undertake a full study of the inflorescences in our British representatives of the family. It is essen-

tial to examine the original figures and texts of Wydler and Eichler. Rendle's reproduction (Rendle, *l.c.*, 516, fig. 236 C) is inaccurately drawn in that it shows b (the bract of axis I) inserted above a (one of the " braeteoles " of axis I). The accounnt of Wydler is not easy to follow. In it, assumption follows assumption. It is clear that in *S. nigrum* (as in other species of *Solanum*) the inflorescence does not arise from the apparent main axis with an immediate subtending bract. The inflorescence is said to have a terminal flower with an inflorescence branch (a simple scorpioid cyme) springing out from it laterally. To establish the existence of this terminal flower the following arguments are used : —

(1) The position of the bract (which is not there) can be recognized by the direction of nodding of the inflorescence.

(2) This position is variable and depends on the (variable) phyllotaxis.

(3) The position of the inflorescence, or what comes to the same thing, of the absent bract, changes according to the number of the preceding leaves.

(4) The first sepal of the terminal flower is the next immediately following the absent braet.

(5) In *S. nigrum*, however, the calyx aestivation is quite valvate, so the first sepal cannot be determined by direct observation.

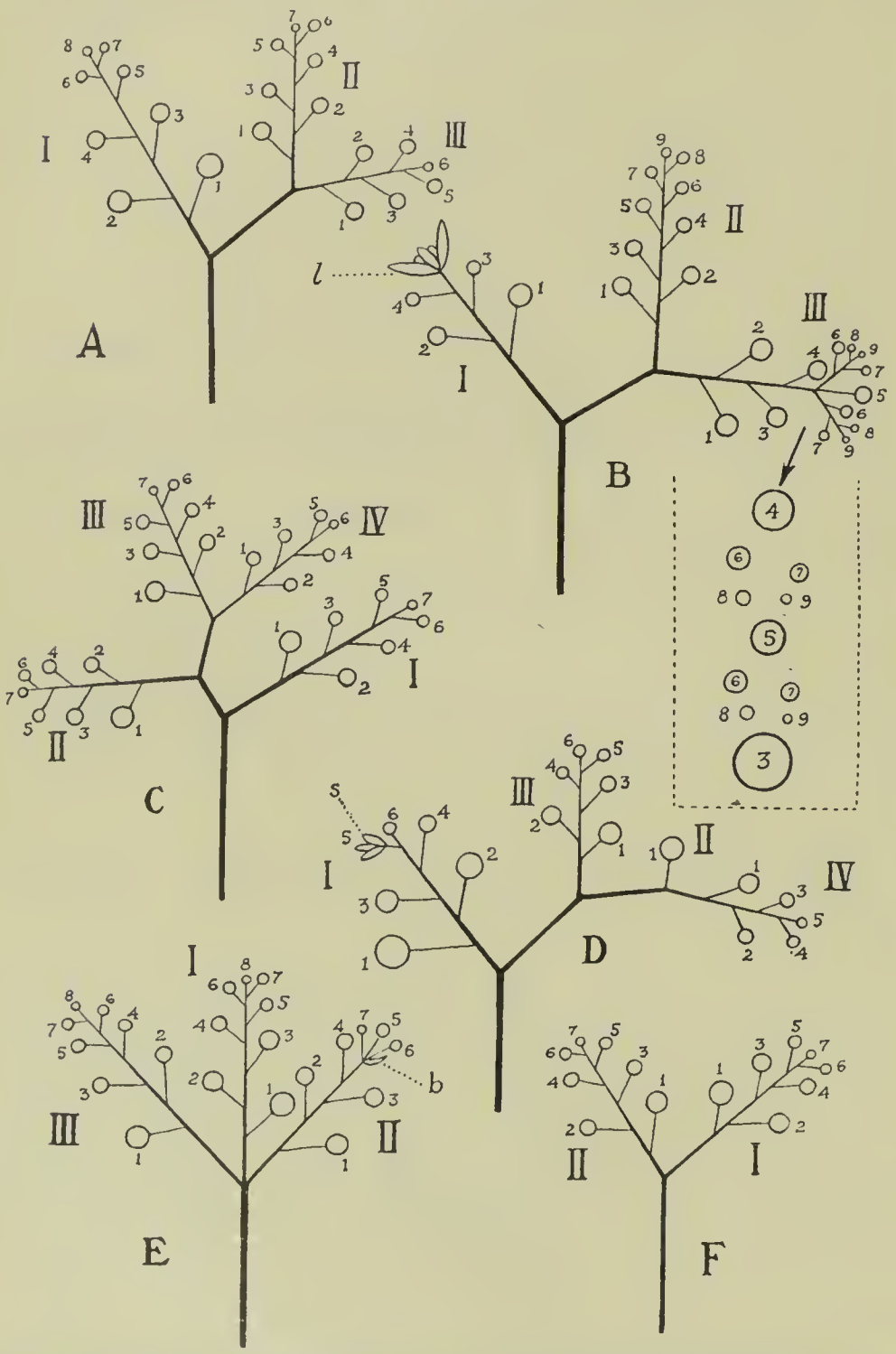
(6) Assuming that the flower has undergone no twisting, the position of the first sepal (and thus of the terminal flower, and the orientation and structure of the inflorescence) can be determined by the orientation of the two carpels which in all Solanaceae fall in a plane which passes through the first sepal.

Anyone who has tried to demonstrate to a class of students the orientation of the carpels in solanaceous flowers will appreciate the artificiality of any conclusions which may be reached by applying this method.

Turning now to Eichler's account and diagram (*l.c.*, fig. 117 E) a further criticism must be made. The scheme he elaborates is based apparently mainly on Wydler's accounnt. It is ingenious but complicated, since it involves, in part of an apparent internode, the fusion or common " intercalary growth " of a main stem ending in an inflorescence, the base of one bracteole, and the stem axillary to this bracteole, the latter being fused above with a braeteole of a higher order and its axillary shoot. The anatomy of such a compound structure should be unusual and its ontogeny well worth detailed study. An examination of the gross morphology of living material of *S. nigrum* has not convinced me of the truth of this explanation since I have so far failed to find specimens which can be interpreted by it.

Whatever be the truth regarding the branch system and the structure of the inflorescence in *Solanum nigrum*, a simpler explanation of these is possible for *S. Dulcamara*.

The whole inflorescence has usually no apparent subtending leaf or bract immediately below it. The obvious absence (presumably by sup-



pression) of all bracts and bracteoles in the normal inflorescence suggests that a bract (or foliage leaf) immediately subtending the whole inflorescence may also have been simply suppressed. The generally accepted

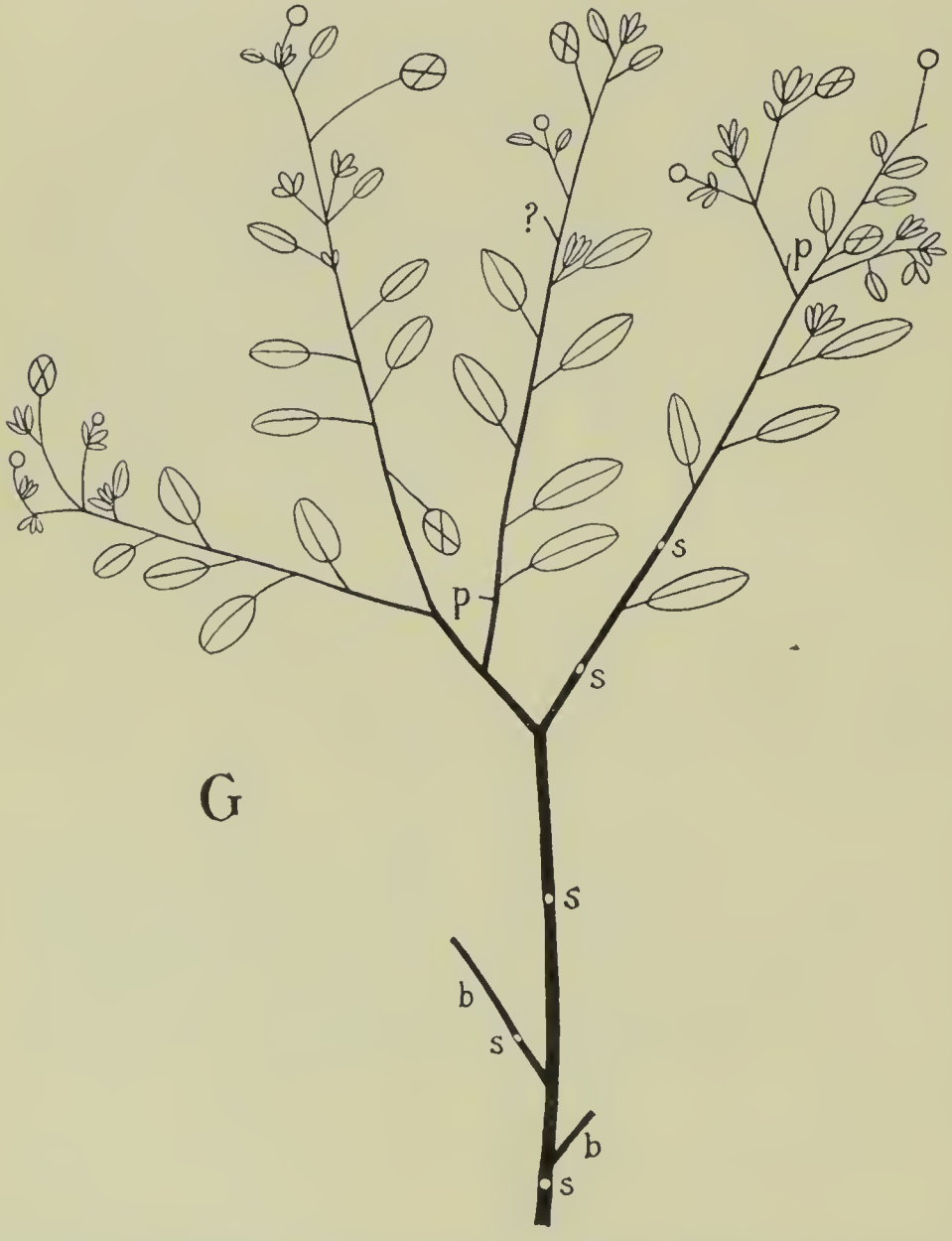
explanation, so far as can be understood from the meagre published accounts traced, is that the inflorescence is terminal while the apparent continuation of the main axis is really subtended by a leaf which by fusion is carried up some distance on the axillary branch. An objection to this is that all leaves examined have directly in their axils a branch or bud. Any fusion and relative carrying up or down of subtending leaves or axillary branches must therefore assume accessory axillary buds. The simplest explanation, and one by which the facts derived from a study of living British material can best be accounted, is that the dichotomy of the axis with one branch ending in an inflorescence and the other in a branch with leaves (and often subsequent similar dichotomy) is a real one in the sense in which " dichotomy " not infrequently occurs in Dicotyledons; that is to say, no fusion of axes from a lower axil is assumed. This does not mean that a single apical cell forks to produce a dichotomy such as occurs in many Cryptogams. Whether or not it is desirable to assume the suppression of a subtending leaf (or bract) is partly a matter of interpretation of Angiosperm " dichotomy." Since in *S. Dulcamara* there is certainly a suppression of bracts (and bracteoles) in the inflorescence, it is probably most reasonable to assume a suppression of bracts in relation to all inflorescence branching. On the other hand, the apparent dichotomy might be due to the suppression of a terminal flower and the production of two lateral branches. This is less likely in *S. Dulcamara*. The reader is referred to Goebel, *Organographie der Pflanzen*, i, 100 (ed. 2, 1913), for an account of dichotomous branching in Angiosperms.

We are, however, here mainly interested in the inflorescence itself. An examination of a large number of living inflorescences from several English counties shows that there is considerable variation in details. A number of diagrams are given here to illustrate some of the variations found. The commonest type, and that which may be taken as the standard, is shown diagrammatically in fig. A. The remaining diagrams can best be interpreted as modifications of this standard

There is most often a complete absence of bracts, bracteoles, and leafy shoots in the inflorescence, but occasionally one or a few reduced leaves occur. The individual flower pedicels have at their bases, where they arise from the inflorescence rachis, a small surrounding " cushion " of tissue, often of a different colour (green like the rachis instead of purple like the pedicel), and causing a break in the continuity of the indumentum. The significance of this " cushion " can only be determined by anatomical and ontogenetical investigation, but it almost gives the appearance of a " pushing out " of the pedicel from deeper tissues of the rachis.

In September 1923 the late Miss M. C. Knowles, of the National Museum, Dublin, sent me material of a plant described as " a single-flowered form of *Solanum Dulcamara* L." The flowers and fruits of this material were solitary in the sense that leaves and sometimes leaf-bearing shoots intervened between one flower or fruit and the next, and that the flowering and fruiting branches were much elongated.

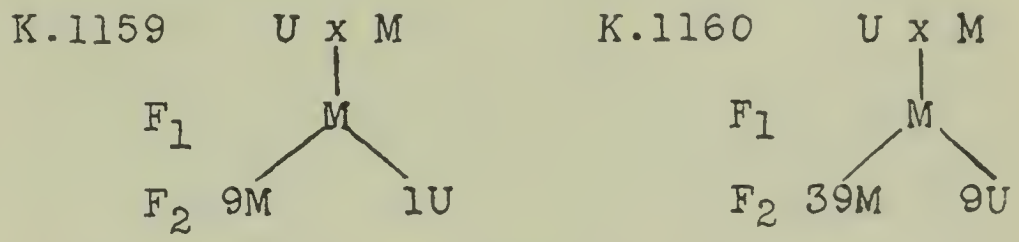
No reference to or description of a similar plant has been found in literature. The following diagram illustrates the arrangement of the leaves and fruits or flowers of a typical piece, not of the original specimen but from an F_2 generation referred to below. For convenience of reference this plant and those of its descendants showing similar characters are referred to below as *uniflora*. Plants with the common ebracteate, ebracteolate, and nearly or quite leafless type of inflorescence are referred to as *multiflora*.



Ripe berries occurred on the original specimen and seeds from three of these were sown in the Herbarium Experimental Ground at Kew. A dozen plants were raised of which two showed clearly the *uniflora* char-

acter. The remaining ten either had quite normal leafless inflorescences or such as showed a certain amount of "growing-out" of small vegetative shoots. It was reasonably assumed that the *uniflora* plants had been derived from selfed seeds, the others from seeds originating by cross-fertilisation between a *uniflora* female and a *multiflora* male gamete. Since *S. Dulcamara* is normally insect-pollinated and the fruits received were the result of open pollination, the results were such as might be expected. Branches of two of the *multiflora* plants correctly accepted as F_1 individuals, as indicated by the F_2 ratios, had a large number of flowers selfed artificially. These flowers were protected from insect visitors by means of insect-proof muslin cages. A considerable number of flowers failed to set seed, either because of a certain degree of self-sterility or because of the somewhat unfavourable conditions under the cages. A sufficient number of seed-containing fruits were, however, obtained to raise two F_2 families, one of which contained sufficient plants to give useful figures.

The *uniflora* character was invariably associated with retarded flowering, *uniflora* plants being at least two to three weeks later coming into flower than the *multiflora* plants growing with them. This was particularly noticeable the first year (1933) in which the F_2 families were scored. Since in 1933 several plants did not flower at all and in 1934 two plants scored in 1933 had died, the figures in the following diagrams are based upon two years' scorings.



Further details must be given before these figures can be properly appreciated. The plants scored as *uniflora* (U) were all clearly extreme forms with the flowers and fruits well separated by intercalated leaves or leafy shoots. The *multiflora* (M) plants, however, were not uniform in inflorescence structure, but showed all grades of development of leaf-bearing shoots from none or few to very many. In K.1159, three plants, and in K.1160, twenty plants were scored as showing marked "growing out." It was impossible to score these into classes because not only did different inflorescences on the same plant sometimes show different degrees of "growing out" but there was some variation from year to year. Only those plants which were clear-cut *uniflora* for two successive seasons were scored under that heading. Three plants scored as *uniflora* in 1933 were scored as *multiflora* showing extreme "growing out" in 1934. A comparable fluctuation was observed in the F_1 plants.

The *uniflora* plants were of slower, less robust growth, on the whole, especially in the earlier stages of their development. This is in agreement with their retarded flowering, and with the interpretation of the

uniflora character as a recessive. Even if the *multiflora* character be accepted as dominant over *uniflora* it is evident that the dominance is not always complete. This suggests the interaction of other factors—perhaps of modifying genes for which the (unknown) male parent may have been heterozygous. Further research on this interesting material might afford valuable data in relation to some of the theories discussed by Dr R. A. Fisher in his book *The Genetical Theory of Natural Selection* (Oxford, 1930).

The published accounts of the cytology of *Solanum Dulcamara* (C. A. Jørgensen in *Journ. Genetics*, xix, 194, 1928, and R. de Vilmorin et M. Simonet in *Zeit. f. Indukt. Abstamm. und Vererbungslehre Suppl.*, Bd. ii, 1521, 1928) give the haploid chromosome number as 12. There is considerable evidence that this is the basic number for *Solanum*. In *S. nigrum* haploid, diploid, triploid, and tetraploid plants have been proved cytologically. Unless such occur also in *S. Dulcamara*, and of this no published evidence has been traced, the ratios given above must be interpreted as those of normal diploids and not as examples of the more complicated ratios obtained from polyploid crosses.

One last matter remains for discussion: the light which the *uniflora* and intermediate types of inflorescence throw upon the normal *multiflora* type. The same type of apparent dichotomy is found in both, but in the former, instead of short leafless branches with rather crowded flowers, leaves with axillary buds are intercalcated between the well-spaced flowers or fruits. It seems simplest to regard any flower as one branch of a dichotomy, equivalent morphologically to the apparent continuation which, instead of forking again almost immediately as in the normal inflorescence, behaves as a monopodium for some length. Thus the elongated apparent axis, partly leaf-bearing, partly flower-bearing, is composed in the *uniflora* plants of more or less alternating and overlapping sympodial and monopodial segments. The morphological equivalence of flowers and of leafy shoots is also evident in many of the intermediate types of inflorescence and can indeed frequently be seen in the ultimate branchings of ordinary *multiflora* plants occurring wild in Great Britain. Apparent examples of trichotomy can be interpreted either as one terminal and two lateral shoots, the latter of the same order, or, as seems much more likely from most of the examples examined, as due to two dichotomies of which one occurs almost immediately after the other. Thus the normal *multiflora* inflorescence is forked two or three (rarely more) times, the branches of these dichotomies being scorpioid cymes without bracts or bracteoles.

EXPLANATION OF DIAGRAMS.

Diagrams A to F constructed from an analysis of inflorescences of *Solanum Dulcamara multiflora* collected from a field near Sheen Common, Surrey, 4/8/1935.

A. The most usual type, may be considered as a standard, with two apparent dichotomies.

B. Unusual in that one " branch " (I) of the first apparent dichotomy has three small leaves (l) near its upper end and that a " branch " (III) of the second apparent dichotomy shows an apparent trichotomy at its upper end.

C. The first flowering "branch" (I) is on the right and a "branch" of the second apparent dichotomy shows a further apparent dichotomy (III and IV).

D. A "branch" (I) of the first apparent dichotomy has a very small shoot (s) with much reduced leaves, in place of a flower (5). A third apparent dichotomy has one "branch " (II) reduced to a solitary flower. This is given the ordinal value II only because it was in advance of any bud on "branch" III.

E. Showing an apparent trichotomy. A small bract (b) is indicated near the end of one "branch" (II).

F. A simple apparent dichotomy, not uncommon in small, few-flowered inflorescences.

The roman figures give the general order of the main inflorescence " branches," as judged from the general relative stage of anthesis of the flowers. The arabic figures indicate the order of opening of the flowers on any one " branch."

G. Diagram of the "inflorescence" in *S. Dulcamara uniflora*. The leaves are represented by elongated-oblong outlines, the larger with a longitudinal line; the fruits are represented by elliptic figures with a cross; the flowers or flower buds are represented by small circles.

b = branch; p = pedicel or petiole; s = scar.

Axillary buds occur in the axils of all the upper leaves, but are only shown when they are growing out into branches.

SOLANUM NIGRUM L. AND ALLIES.

C. E. Britton.

Solanum nigrum L. is one of those plants whose area of distribution has been profoundly enlarged by means of human activities. It is probably an intruder into the floras of the temperate regions of the globe, and not a very ancient arrival into Britain. It still retains the characteristics of a native of warm regions, making a tardy appearance above the soil, to flower only when summer is fully established, and it is still in bloom when the advent of early autumnal frosts proves fatal. Like most of the plants with which it associates, it is distinctly nitrophilous, abounding as a weed on loamy soils liberally treated with organic manures, especially where market-gardening is carried on, or in the vicinity of the same. On clay and chalk soils of the uplands, particularly where cereal crops are cultivated and inorganic manures used, the Black Nightshade is missing or infrequent. On rubbish dumps it is usually to be seen in profusion. Significant, as pointing to its known early place of growth in Europe, is that the plant is the *Solanum hortense* of the herborists, and, in consequence, the "Garden Nightshade" of early native botanical authors. As a common weed, it receives little attention from collectors, and the well-marked variations that exist attract notice only at rare intervals. Principal variations concern habit, foliage, and colour of fruit. It is chiefly the latter that has engaged interest in Britain, such deviations from the normal dark hue as green, yellow, yellowish-green, and red berries. Apart from variations in fruit-colour, the species presents several points of interest. For instance, a musk-like odour has been attributed to the flowers, a character that has hitherto eluded me. Although the plant is without any conspicuous hairs, yet the shoots are freely furnished with broad-based acute hairs, curved, and appressed to the surfaces of the stems and leaves, imparting a scabridity to the latter. Usually the branches are furnished with prominent ridges which originate at each side of the base of the petioles, are developed downwards, finally becoming indistinct. These ridges are tuberculate at intervals, each tubercle being surmounted by a stout hair curved at the base, then appressed. It is owing to the presence of the tubercles that the ridges are described by some authors as dentate. The inflorescences are extra-axillary, subumbellate, with the peduncle spreading or divaricate, the pedicels are reflexed before expansion of the flowers, afterwards becoming erect when the flowers open, and are finally reflexed during the ripening of the fruits.

Considerable diversity exists in the method of treatment of this species adopted by native floristic authors, as may be seen in the standard floras and plant lists. This may be due to inadequate knowledge

of the plants dealt with, for, as my own limited observations indicate, forms occur that transmit their distinguishing features whether of leaf or fruit, and even leaf-character and fruit-character may jointly descend unchanged. The following are the forms recognised in our two plant-lists:—

London Catalogue of British Plants, 11th ed. (1925).	British Plant List, 2nd ed. (1928).
1424 *nigrum* L.	2 1846 *nigrum* L.
b. *ochroleucum* (Bast.).	(*ochroleucum* Bast., p.p.).
c. *miniatum* (Bernh.).	b. *luteo-virescens* (Gmel.).
d. *littorale* Raab.	c. *humile* (Bernh.).
	d. *atriplicifolium* (Desf.) Dunal.
	e. *prostratum* F. Gér.
	f. *littorale* Raab.
	3 *miniatum* Bernh.

Comparing these lists, it will be seen that in the *London Catalogue* *S. ochroleucum* Bast. appears as a variety and that the red-fruited *S. miniatum* Bernh., treated as a species by Druce in the *British Plant List*, is also relegated to the lower grade.

The treatment of *S. nigrum* L. and its allies by Rouy in *Fl. Fr.*, x, pp. 364-7, deserves passing notice. *S. Morella* Desv. is the name adopted to cover *S. nigrum* in its widest sense. Under this is the sub-species *S. nigrum* (L., p.p.) Mill. with many black-fruited varieties.

Subordinate to this are the "races" (1) *S. ochroleucum* Bast., with four varieties marked by yellowish or greenish-yellow berries, and (2) *S. alatum* Moench, the red-fruited form. Sub-species *S. luteum* Mill. (as sp.) is the hairy plant with yellow berries that, as a "casual," is of very rare occurrence in Britain. The placing of the green and yellowish-fruited forms in a grade equal to that assigned to *S. alatum* Moench appears justified. Rouy's arrangement is referred to here, as Salmon, in his *Flora of Surrey*, appears to adopt the views of Rouy to the extent of placing Surrey records of Black Nightshade with yellow, bright green, or greenish-yellow berries to a var. *ochroleucum* (Bast.). Whilst perhaps it may be allowable to place diverse plants with various shades of green and yellow berries to *ochroleucum* when that is treated as a species or semi-species, it scarcely seems legitimate to place such plants under a var. *ochroleucum*, especially a dubious 17th century record of *Solanum* with golden berries.

(1) BLACK-FRUITED FORMS.

S. nigrum L., var. *vulgatum* Dunal in DC. Prodr., xiii, I, p. 50—Branches sub-terete. Var. *melanocerasum* Dun., *l.c.* =

S. melanocerasum Willd. Enum. Hort. Berol., p. 236 (1809)—Distinguished from the preceding by the angular dentate branches. Var. *atriplicifolium* Dun., *l.c.*—Marked by the sinuate-angular leaves = *S.*

nigrum, var. *sinuatum* Druce, *Rep. B.E.C.*, 1920, p. 33, 1921, p. 297. Var. *prostratum* F. Gér. in Magnier, *Scrinia*, p. 356 (1895)—Stem prostrate, leaves small, quite entire.

(2) GREEN, YELLOW, OR YELLOWISH-GREEN-FRUITED FORMS.

S. humile Bernh. in Willd., *l.c.*—Described as distinguished by its small stature, diffuse habit, lower leaves somewhat wavy entire, or with one or two teeth; the upper leaves entire, berries green.

S. ochroleucum Bast. in Desvaux Journ. de Bot., iii, p. 20 (1814)—Characterised in the work mentioned as having strigose angular dentate branches, leaves ovate-oblong, sinuate-angular, somewhat hairy, berries yellow-green. The author stated that the plant grew about Anvers in the company of *S. nigrum* Willd., *S. humile* Bernh., and *S. miniatum* Willd. and that it differed from *S. humile* by reason of its erect stems two or three times taller, by the angles being well developed and dentate, by the more elongated deeply sinuate leaves and especially by the berries being variegated with green and yellow, and not of a uniform yellow as in *S. humile* [Willdenow, however, described the berries of the latter as *viridibus*].

S. luteo-virescens Gmel. Fl. Bad.-Alsat., 4, p. 177 (1826)—Described by this author as marked by the angular asperous branches, leaves ovate undulate, and berries greenish-yellow. Under this name was included *S. humile* Bernh. Gmelin stated that his plant was closely allied to *S. luteum* Mill., from which it could be distinguished by the shorter stem with widely-spreading branches sub-angular and asperous, leaves less hairy and berry watery, greenish-yellow, but not yellow. A slight musk-like odour was present. Although it remained unaltered in cultivation, the suggestion was made that it was a hybrid between *S. luteum* Mill. and *S. nigrum* L. A variation with berries variegated yellow and green was referred to *S. ochroleucum*. The French botanist F. Gérard distinguished three varieties of this—a. *genuinum*—ripe berries of a greenish-waxen hue, stem erect, leaves sub-glabrous.—b. *citrinum*—ripe berries of a lemon colour, stem erect, together with leaves sub-glabrous.—c. *demissum*—ripe berries fully yellow, stem prostrate or ascending, stems and leaves sub-glabrous.

S. nigrum L., var. *chlorocarpum* Spenner Fl. Frib., iii, p. 1074 (1829)—Simply described as having berries green when mature, *S. luteo-virescens* Gmel. being queried as synonymous.

S. nigrum L., var. *viride* Neilreich, Fl. N.Ö., p. 535 (1859)—Described as having berries green, becoming yellowish.

(3) RED-FRUITED FORMS.

S. alatum Moench, Meth. Pl., p. 476 (1794)—The author attributed to this rough angular, almost winged stems, leaves ovate, sinuate, subpilose, berries pale red.

S. miniatum Bernh. in Willd., *l.c.*—Described as having branches strigose-pubescent, angular, dentate, leaves ovate, undulate, glabrous. Said to resemble *S. villosum* Lam. (*S. luteum* Mill.), but differing in

branches destitute of spreading hairs and leaves glabrous or furnished with scattered appressed hairs and berries pale red.

S. puniceum Gmel. Fl. Bad.-Alsat., 4, p. 177 (1826)—Branches angular, asperous, leaves ovate, undulate, berries crimson. To this Gmelin placed *S. miniatum* Bernh. According to Gmelin, *S. puniceum* was not infrequent about Carlsruhe and elsewhere, in gardens, cultivated ground and waste places, usually occurring in the company of *S. luteum* and *S. nigrum*, of which he suggested it was a hybrid. He insisted that the berries were always crimson (*semper puniceae*) and not of a paler hue (*non miniatae*), hence the specific name adopted.

S. nigrum L., var. *rubrum* (Mill.) Brand in Koch Syn. Deut. u. Schw. Fl., iii, p. 2008 (1907)—Characterised by red berries, and said to be a very rare and doubtful plant, perhaps identical with *S. alatum* Moench.

BRITISH RECORDS.

S. nigrum L., var. *vulgatum* Dun.—There are specimens in herbaria that show the characters ascribed to this. It is, however, a form not hitherto encountered by me in the field.—Var *melanocerasum* Dun.—A common British form whose name does not appear in our lists. Recorded by Druce from Oxford.—Var. *atriplicifolium* Dun. = *S. nigrum* L., var. *sinuatum* Druce, *Rep. B.E.C.*, 1920, p. 33; 1921, p. 297. Described by Druce as "a distinct plant with the leaf-outline of *miniatum* but with black berries, which at least deserves varietal rank." Recorded from Bradford, Abingdon, and Thetford.—Var. *prostratum* F. Gér.—Bristol, I. M. Roper, *Rep. Watson B.E.C.*, 1922-23, p. 219.

S. humile Bernh.—Recorded from Tweedside near Dryburgh in 1914.

S. ochroleucum Bast.—As previously mentioned, Surrey plants with berries yellow, bright green, or greenish-yellow have been placed to this.

S. luteo-virescens Gmel.—Recorded from solitary localities in Berkshire, Oxford, Kent, and Guernsey, and from the neighbourhood of Bournemouth.

S. nigrum L., var. *chlorocarpum* Spenner—Under this unequivocal name a green-fruited plant has been recorded from Surrey (*Rep. B.E.C.*, 1930).

S. miniatum Bernh.—As to plants with red-coloured berries, there are old records from Cornwall, Surrey, Kent, the Channel Isles, and a more recent one from Bristol. The records are meagre, and it is doubtful whether a red-fruited form has obtained a permanent footing in Britain. In Jersey the position is different, for there *S. miniatum* Bernh. seems established.

OBSERVATIONS ON LIVING WILD AND CULTIVATED PLANTS.

(1) *S. nigrum* L.—Oxted, Surrey. Tall, much branched, branches with prominent toothed ridges, leaves ovate-rhomboidal, sinuate-angular, light green, lamina decurrent upon the petiole, furnished on both surfaces with scattered acute broad-based appressed hairs; inflorescence 7-8 flowered, peduncle and pedicels erect in flower, peduncle divaricate in fruit and pedicels deflexed. Berries black, subglobose, 9 × 10 mm.,

savour disagreeable. Hairs on stems, branches, peduncles and pedicels appressed. Agrees with description of var. *melanocerasum* Dun.

(2) *S. nigrum* L., var. *chlorocarpum* Spenn.—Plants referred to this have been cultivated from two Surrey and one Sussex localities. From the last-mentioned county, Mr E. Payne sent me living plants in 1932, accompanied by the interesting note here reproduced. "*Solanum nigrum* is one of the commonest market garden weeds I know. Var. *chlorocarpum*, despite close observation over a wide area, I have only seen in one small spot, where it has been established for quite a few years. Its leaves are markedly different from those of *S. nigrum*, being sinuodentate to a degree I have never observed in the latter. This feature constitutes the principal difference between the two plants, as it enables you to distinguish the one from the other while the plant is as yet in flower. The fact that you can identify the plant before the fruits assume their proper colour appears to me to be very significant and inclines one to think that var. *chlorocarpum* is something more than a colour variant of *nigrum*." Unfortunately, the undulate, sinuate-dentate type of leaf referred to does not always accompany green berries, and examples of var. *chlorocarpum* from Hook and Godstone, Surrey were bearing plane leaves with angular serratures absent or few in number. The stems and branches of the Southwick specimens were furnished with prominent tuberculate ridges bearing appressed hairs. There was no suggestion of yellow in the green of the berries. At Godstone, Surrey, Mr A. Beadell found plants similar to those reported from Hook. Cultivation during successive seasons has shown that var. *chlorocarpum* remains unchanged. The plants raised from seed taken from the Southwick form were characterised by bright-green rhomboidal-ovate leaves, undulate, and as much angular-dentate as in *S. miniatum* Bernh., inflorescence 5-7-flowered, corolla 11 mm. in diam., fruit 9×10 mm., subglobose, with savour agreeable or nauseous. Plants derived from the Godstone gathering were marked by dark-green foliage, leaves plane, ovate-acuminate, entire, or sparingly dentate or sub-angular; inflorescence 4-6-flowered, corolla 14 mm., savour of fruit disagreeable. Although the mature berries are bright-green, eventually a slight yellowish tinge appears, owing to the berries becoming watery and the large mass of flattened yellowish seeds becoming visible beneath the pericarp.

(3) *S. miniatum* Bernh.—The following features were presented by cultivated plants grown from seed of Jersey plants. Smaller and more slender than any form with black or green fruit, stems and branches only slightly angled, angles by no means wing-like, in fact, less prominent than in *S. nigrum*, hairs on stems, branches, and leaves short, curved, appressed, scattered. A spreading pubescence is by some authors attributed to *S. miniatum*, a character not present in the Jersey plant. The berries differed from those of *S. nigrum* and var. *chlorocarpum* both in size and shape. In the two forms mentioned the berries are globose-depressed, about 9 mm. in height and 10 mm. broad, but, in *S. miniatum* the red berries are sub-globose, approaching an ovoid

form, being 7 mm. in height and 6 mm. broad. An unpleasant savour attaches to the berries. In all forms, the upper parts of the branches are clothed with subsessile glands. Those of *S. nigrum* and var. *chlorocarpum* exhale the usual solanine odour when bruised, but, on pressure, a putrescent-like odour arises from the glands of *S. miniatum*.

SYSTEMATIC ARRANGEMENT.

Although the characters which separate the various-hued forms are not of outstanding importance, there is no reason to doubt that there are three series of true-breeding plants. It will be apparent from the number of described forms and from the characters depended upon, that identification is attended with difficulties, especially as suspicion may exist that certain names are synonymous. It is of interest to consider whether the forms with yellow or green fruit are mutants from black-berried plants or whether again they are fluctuations of one or more species or subspecies separable from *S. nigrum*. The former view appears doubtful, having regard to the recorded occurrence of "var. *luteo-virescens*" in as many as six localities in the Bournemouth neighbourhood. If all these forms are associated, it will be convenient to arrange them under the oldest existing name in the group. Already it has been mentioned that such a course was adopted by Rouy, but the group name fixed upon by that botanist, i.e., *S. ochroleucum* Bast., is antedated by *S. humile* Bernh., and, accordingly, that name is here employed.

As to the red-fruited forms, bearing the names *S. alatum* Moench, *S. miniatum* Bernh., and *S. puniceum* Gmel., it does not appear certain that these are strictly synonymous, although it is usual, outside Britain, to regard the two latter names as equivalent to *S. alatum* Moench. Yet, the original description of the latter, and modern authors' descriptions also, indicate a plant somewhat different from *S. miniatum* Bernh. In this case it is thought better to subordinate *S. miniatum* and *S. puniceum* as varieties under the older name *S. alatum* Moench. In the list that follows, the "var. *littorale* Raab" of the *London Catalogue* and *British Plant List* is omitted. The inclusion of this under *S. nigrum* L. is a curious error. It finds no entry in the *British Plant List* issued in 1908, nor in the 10th ed. of *The London Catalogue of British Plants* published in the same year. It first appears under *S. nigrum* L. in the 11th ed. of the *London Catalogue* (1925) and this error was reproduced in the *British Plant List*, ed. 2 (1928). The plant concerned is *Solanum littorale* described by Raab in *Flora*, ii. p. 414 (1819), as a new species distinguished from *S. Dulcamara* L. by the villous stems and tomentose foliage. It is synonymous with *S. Dulcamara* L., var. *tomentosum* Koch and *S. Dulcamara* L., var. *villosissimum* Desv. The trivial name refers to the locality where it was observed by the shores of Lake Leman.

SOLANUM NIGRUM L.

Var. *vulgatum* Dun. in DC. Prodr. xiii, I, p. 50

Var. *melanocerasum* Dun., *l.c.*
Var. *atriplicifolium* Dun., *l.c.*
Var. *prostratum* F. Gér. in Magnier, "Scrinia," p. 356 (1895).

S. HUMILE Bernh. in Willd. Enum. Hort. Berol., p. 236 (1809).
Var. *typicum* = *S. humile* Bernh. (*sensu stricto*).
Var. *ochroleucum* = *S. ochroleucum* Bast. in Desvaux Journ. Bot., iii, p. 20 (1814).
Var. *luteo-virescens* = *S. luteo-virescens* Gmel. Fl. Bad.-Als., 4, p. 177 (1826)—var. a. *genuinum* F. Gér. in Magnier, "Scrinia," p. 356 (1895).
Var. *citrinum* = *S. luteo-virescens* Gmel., b. *citrinum* F. Gér., *l.c.*
Var. *demissum* = *S. luteo-virescens* Gmel., c. *demissum* F. Gér., *l.c.*
Var. *chlorocarpum* = *S. nigrum*, γ *chlorocarpum* Spenn. Fl. Frib., iii, p. 1074 (1829).

S. ALATUM Moench Meth. Plant., p. 476 (1794).
Var. *miniatum* = *S. miniatum* Bernh. in Willd., *l.c.*
Var. *puniceum* = *S. puniceum* Gmel. Fl. Bad.-Als., 4, p. 177 (1826).

VARIETIES OF MELAMPYRUM PRATENSE L.

C. E. Britton.

In the course of study of the native forms of *Melampyrum pratense* L. it has been borne upon the writer that a revision of the varieties placed to this species is necessary. It is probable that there is no other British species which has had so many named forms ascribed to it as a result of examination of herbarium material apart from study of the living plants. No other species exemplifies to such an extent the weakness of the evidence afforded by non-living material. It is, I believe, not fully realised how inadequate herbarium specimens may be to illustrate the characteristics of a species, for there is always present with the collector a tendency to secure the most striking form seen to the neglect of the collection of the average form. In the case of annual social hemi-parasitic plants, as *Melampyrum*, some, at least, of the divergences seen among the communities may, with confidence, be attributed to differences in nutrition. Subject to unfavourable conditions, a plant may be more or less arrested in growth and so present the facies of a form otherwise absent. A plentiful supply of food-material may tend to develop characters, such as enlarged leaf-surfaces, that mark certain varieties. Study of the average form present would be decisive. It is on these lines that observation of the living plants would be likely to yield results of value.

In descriptions of the varieties and forms stress may be placed upon the number of pairs of intercalary leaves. Evidence on this point is best obtained by examination of numerous individuals from the same colony. The results are usually of interest. Thus, in var. *lanceolatum* Spenn. the intercalary leaves may be said to be 0-1-2 pairs, but communities show that these figures exist in varying degrees, as in the following instances. The figures are arranged in the order of descending frequency. (1) 1-2-0, (2) 1-0-2, (3) 1-2-0, (4) 1-2-0, (5) 0-1-2.

In previous papers, criticisms have been passed upon certain varieties appearing in the *British Plant List* and *London Cat.*, ed. xi, and in the writer's view, vars. *paludosum*, *foliatum*, and *brevidentatum* should not be employed to designate British plants, on present knowledge. It is not overlooked that in the first-mentioned list the various forms are arranged under two specific names, *pratense* L. and *vulgatum* Pers. As to the *Lond. Cat.*, the method adopted is unique, and no reference appears in the "Explanations of the Catalogue." Under *M. pratense* L is a. *pratense* Beauv.—with varieties b. *scotianum*, c. *paludosum*, d. *montanum*, and e. *ericetorum*; and b. *vulgatum* Pers.—with vars. b. *britannicum*, c. *concolor*, d. *laurifolium*, e. *ovatum*, f. *lanceolatum*, g. *hians*, and h. *pseudo-silvaticum*. It is clear that the ultimate divisions are not formae but varieties. In the absence of any explanation the

grade of the two primary divisions is left in doubt. It is evident that in any new edition of the lists mentioned a drastic revision of the subordinate forms will be necessary. The attempt to arrange the forms of the common British Cow-wheat under two species or two subspecies fails to give satisfaction, and it would perhaps be better if the grade of subspecies were extended to several of the British forms.

Var. *britannicum* Beauv.—Plants so determined look by no means identical, and the characters ascribed to the variety present little to distinguish it from var. *lanceolatum*.

Var. *commutatum* Beck and sub-var. *concolor* Schönheit.—There appears little to separate these as the contrasting characters here given indicate.

commutatum.	*concolor*.
Calyx 7 mm. long, including teeth, 4-5 mm.	Calyx 5 mm. long, including teeth, 3 mm.
Corolla yellowish or whitish-yellow.	Corolla greenish-white and yellow or lemon-coloured.
Lower bracts entire or sub-hastate dentate at the base, upper bracts gradually becoming palmatifid-pectinate.	Lower bracts entire or only slightly toothed at the base, succeeding bracts hastate and more or less deeply falcate-dentate, uppermost palmatifid.

Both are typically broad-leaved forms (ovate-lanceolate) with conspicuous intercalary leaves (usually 3-5 pairs), and are usually of robust growth, in consequence of which they find representation in herbaria by incomplete examples only, and then usually under the name of "var. *latifolia*." The stout habit, and the presence of three or more pairs of intercalary leaves separate these two from allied forms.

Var. *concolor* Schönheit.—A description is given of plants found growing near Trotterscliffe, W. Kent, v.-c. 16, examples of which have been distributed through the Bot. Exchange Club (Ref. No. 4189). Stem stout, 2-3 mm. diam., c. 40-50 cm. in height, glabrous, apex inclined, nodes distant (40-60-120 mm.); cauline leaves 4-5 pairs all with branches from the axils, lowest branches more or less arrested, branches at middle of stem erect or ascending, floriferous, usually branched and not exceeding main stem; lamina of cauline leaves oval-lanceolate, acuminate, 70 × 15-18 mm., scabridulous, intercalary leaves 3-4 pairs, oval-lanceolate, acuminate, c. 65 × 18 mm., scabridulous, about 50 mm. distant. Inflorescence commencing at 8th-9th node, lower bracts similar to intercalary leaves, rounded and with 2 pairs of slight teeth at base, intermediate bracts lanceolate-hastate more dentate at base, decreasing in size, apical bracts palmatifid, mid-lobe largest. Flowers c. 13 mm., calyx-tube 2 mm. teeth 3 mm., scabridulous.

Var. *digitatum* Schur, Enum. Pl. Transs. (1886), p. 506, described by that author as having a stout much-branched stem, branches widely spreading, flowers in elongated racemes, with large palmatifid bracts. As noted in my previous paper (*Rep. B.E.C.*, 1935), there are not in

the Druce Herbarium any plants determined by Beauverd as *digitatum* without qualifying remarks.

Plants found growing near Shoreham, W. Kent, by Mr A. Beadell, have been identified as this variety and distributed through the Bot. Exchange Club, 1935. The characters of these plants are shown in the following description. Plant c. 40 cm., stem erect or flexuose, 3-4 mm. in diameter, purplish, glabrous below, goniotrichous above; nodes 30-45 mm. distant, branches arising from axils of all cauline leaves, spreading or ascending, the upper equalling or exceeding main stem, and again branched, all flowering. Cotyledons absent at flowering time. Cauline leaves oval-lanceolate, acuminate, 75-85 × 15-20 mm., about 5 pairs, spreading, scabridulous; intercalary leaves 1-2 pairs or 0, oval-lanceolate, acuminate, 65 × 15 mm., scabridulous. Inflorescence commencing at 7th node, lowest 1-2 pairs of bracts oval-lanceolate 50-80 × 20-24 mm. entire, reflexed or spreading, succeeding bracts oval-lanceolate, hastate at base, upper bracts deltoid, 12-15 × 12-18 mm., palmatifid, lobes linear-lanceolate, acuminate, median exceeding lateral. Calyx pale-green, spotted with purple, tube 2 mm., lower teeth straight, 3 mm., upper teeth curved-erect, 3.5 mm. Corolla 16 mm., uniformly yellow or tube paler, lip deep yellow, tube occasionally becoming purple. A large robust form notable after the fall of the corollas for the numerous contiguous pairs of spreading deeply palmatifid bracts that give a bristling appearance to the apices of the stem and branches.

In Beauverd's Monograph, the name *digitatum* appears as a group name for a series of formae. These are:—

(1) f. *laciniatum* (Kosh. et Zing.) Beauv. = *M. laciniatum* Kosh. et Zing. in Bull. Soc. Nat. Moscow. 56 (1881). I. p. 313 = *M. pratense* L., var. *laciniatum* Rouy, Fl. Fr., xi. p. 125 (1909). The latter author distinguishes his variety as having bracts broader than in the type, and divided into elongated lanceolate divisions that exceed the breadth of the central disk, a description that would apply to the W. Kent plants previously described. It is, however, doubtful whether the plants of Western Europe will prove identical with the Russian *M. laciniatum* Kosh. et Zing. which was suggested by the authors of the name to be possibly a hybrid between *M. pratense* L. and *M. nemorosum* L., the latter a non-British species.

(2) f. *murorum* Peauv.—A plant of stony places, described as smaller than the preceding, with spreading, simple, or slightly compound branches. Not recorded for Britain.

(3) f. *oratum* (Spenner) Beauv.—Already dealt with in *Rep. B.E.C.*, 1934.

(4) f. *lanceolatum* (Spenner) Beauv. = *M. pratense* L., var. *lanceolatum* Spenner Fl. Frib., ii (1826), 367.

(5) f. *extremum* Westerlund.

(6) f. *divaricatum* Kerner ex O. Dahl in Blytt's "Haandb. Norges Flora" (1906), p. 642.

Nos. (5) and (6) are plants closely related to No. (4), from which they are distinguished, according to Beauverd's key to the forms of *M. pratense*, by geographical distribution, *lanceolatum* being a plant of Central Europe, *extremum* and *divaricatum* confined to Scandinavia. They are mentioned here as there is reason to believe that they occur in Britain or are represented by closely allied forms.

Var. *lanceolatum* Spenn.—This is the most frequently met with representative of *M. pratense* L., at least in Southern Britain. It varies chiefly in leaf-dimensions, the extreme condition being f. *laurifolium* mihi = *M. pratense* L., subsp. *vulgatum* (Pers.) Beauv., var. *vulgatum* (Pers.) Beck, sub-var. *laurifolium* Beauv. Monogr., 483, 507. A description drawn-up from plants authenticated by Beauverd, appears in *Rep. B.E.C.*, 1934, p. 915. The name *laurifolium* was brought into being to designate British plants erroneously referred to var. *latifolium* Schueb. & Mart. It would be incorrect to assume that all native plants named by collectors var. *latifolium* are identical with Beauverd's *laurifolium*. Examination of herbarium material shows that any form of *M. pratense* with notably broad leaves was liable to be identified with var. *latifolium*, and most of the plants formerly so named would come under one or other of the forms named by Beauverd as *commutatum*, *concolor*, *ovatum*, *digitatum*, or *lanceolatum*. It is, however, with the last-named that plants determined by Beauverd as *laurifolium* are most closely connected. They appear to be nothing more than a broad-leaved form of var. *lanceolatum* Spenner.

In coppices recently cleared of undergrowth, plants of var. *lanceolatum* may at times be seen which have developed a rather unusual aspect. The stem remains short with contracted internodes and numerous short branches spreading outwardly. This condition is probably due to the prevailing environmental factors, and is likely to be transient only, disappearing as the undergrowth is renewed. The two following forms have already been referred to under var. *digitatum*.

M. pratense L., f. *extremum* Westerlund in Bot. Notis., 1904, pp. 7-8.—Described by the author as a robust form with 3-5 pairs of ascending branches often equalling the stem, bracts cuneate or abrupt at base, with 2-4 elongated slender teeth, and calyx hairy, not merely ciliate. Beauverd describes it as having a stem about 35 cm. in height, 3-5 pairs of rather broad cauline leaves, branches arcuate, intercalary leaves 2-3 pairs. Recorded by Westerlund from Vastergötland. Plants occur in Surrey closely agreeing with the above descriptions, but further study is necessary.

M. pratense L., * *vulgatum* (Pers.), f. *divaricatum* (Kern. in herb.) Ove Dahl in Blytt Haandbog I Norges Flora (1906), p. 642, who described it as a form with very wide-spreading branches, narrow leaves, and entire or slightly toothed bracts. According to Beauverd's description, it is about 20 cm. in height, slightly branched, branches divaricate, cauline leaves rather narrow (40 × 3-5 mm.), rarely 6-8 mm. wide, intercalary leaves 0 or 1 or 2 pairs. The cotyledons are absent at flowering time, the stem branched at the lower 3-4 nodes, branches

simple or slightly branched, bracts dentate-palmatifid; inflorescence beginning at nodes 4th to 6th; calyx glabrous, tube short, teeth arcuate-filiform, corolla golden, about 13 mm. long. The distribution is given by Beauverd as Suecia and Lapponia. In Epping Forest, Essex, v.-c. 18, the only form of *M. pratense* L. hitherto seen by me—and that in two separated localities— is one that so closely agrees with the descriptions of Dahl and Beauverd that I see no reason to refrain from naming it *M. pratense* L., f. *divaricatum* Kern. ex Dahl, *l.c.* As similar plants may be met with elsewhere, a full description follows. Plant c. 20-30 cm. in height. Stem 1 mm. in diam., flexuose, glabrous, lower nodes 10-20 mm. distant; cotyledons oblanceolate-oblong, 17 × 4 mm., persistent till fruiting time in small plants, deciduous earlier in larger plants; cauline leaves lanceolate-linear, acuminate, 60-70 × 5-8 mm., hispidulous, spreading, all bearing branches in axils, branches spreading at right angles, 28-40 cm. in length, usually with secondary branches spreading at a similar angle, all flowering and prostrate, intercalary leaves 0-1-2 pairs, resembling upper cauline leaves. Inflorescence commencing at 4th-6th nodes, lower pairs of bracts lanceolate-linear entire, 70 × 5-10 mm. (rarely 80 × 15 mm.), intermediate bracts linear-lanceolate, falcate, decreasing in size, pectinate at base, teeth 2-3 pairs linear-lanceolate, apical bracts linear-falcate, smaller, basal teeth 1-2 pairs, ascending or divergent. Flowers c. 12 mm., calyx glabrous, tube 2 mm., teeth 3 mm., linear-setaceous, ascending corolla yellow.

PLANT NOTES.

†33/1. Matthiola incana Br. In plenty with whitish flowers on cliffs above the railway near Dover; one plant with violet flowers on the cliffs between Dover and St Margaret's Bay, E. Kent, v.-c. 15, J. P. M. Brenan.

†70/2. **Vogelia apiculata** (Fisch., Mey., et Avé Lall.) Vierhapper in Oesterr. Bot. Zeitschrift, lxx, 169 (1921); Hayek, Prodr. Fl. Penins. Balcan., i, 484 (1925). *Neslia apiculata* Fisch., Mey. et Avé Lall. in Ind. oct. sem. hort. Petr. (1842), p. 68.

St Philip's Marsh, Bristol, West Gloucester, v.-c. 34, June 1905, J. W. White, vide specimens in *Herb. White* in *Herb. Univ. Bristol.*

Distribution: Mediterranean Region and the Orient.

This species closely resembles the well-known *V. paniculata* (L.) Hornem. of our rubbish-tips and chicken-runs, but is immediately distinguished by characters of the fruit. This, in *V. apiculata*, is up to 2.8 mm. wide, and conspicuously cuspidate both at the base (where it is distinctly narrowed) and at the apex beneath the style, while definite longitudinal ribs tend to form amongst the reticulation of the surface. In *V. paniculata*, on the other hand, the fruit is up to 2.5 mm. wide, and rounded or rounded-truncate at both ends, with only a very minute apiculus beneath the style, while the reticulation of the surface does not form longitudinal ribs. The fruits of *V. apiculata* are also regarded as more compressed and sublenticular than those of *V. paniculata* which are described as subglobose, and they tend to be as long as broad, whereas those of *V. paniculata* are broader than long. *V. apiculata* is definitely Mediterranean in distribution, whereas *V. paniculata* is more a plant of Central Europe and the North Temperate Regions. The species are so alike that all British botanists should examine their material closely. Present evidence suggests that *V. apiculata*, in spite of its Mediterranean origin, is the rarer of the two as an adventive, since all the British sheets at Kew, and all the other Bristol specimens which have been examined, are to be referred to *V. paniculata.* The Kew material of *Vogelia* has recently been carefully sorted and re-arranged by Dr W. B. Turrill, and it is remarkable to see how few authors and collectors have succeeded in recognising *V. apiculata*, although it has occasionally been segregated under other, later, names such as *Neslia thracica* Velenovsky, *N. hispanica* Porta, or *Vogelia paniculata*, var. *thracica* (Vel.) Bornm.—C. I. and N. Y. Sandwith.

80/2. Raphanus maritimus Sm. Southwick, W. Sussex, v.-c. 13. Specimens of a very abnormal plant have been sent to Kew, who report

as follows:—" The specimen enclosed was an interesting example of *R. maritimus*, showing virescence and partial phyllody of the flowers, that is, the normal flower parts are replaced by green organs partially simulating much reduced foliage leaves. We have no record of a similar abnormality in this species, though there are several records published of parallel abnormalities in at least one other species of the genus. These phyllomorphic flowers, as well as occurring at the usual intervals in the raceme, were also on other stems crowded together in dense heads, and in a manner quite foreign to the usual growth of the plant." L. A. W. Burder.

†467/3b. Anagallis foemina Mill., var. **Allionii** Rouy Fl. Fr., x, 181, 1908. Splott, Glamorgan, v.-c. 41, E. Vachell. This has verticillate leaves in whorls of threes.

558/. The Collection of Mints. The writer has recently sent some specimens of Mints to Herr R. Trantmann of Budapest, in the hope of clearing up the uncertainty attaching to the identification of *Mentha nemorosa* Willd. Herr Trantmann has very kindly sent a drawing showing the important characters of the plant upon which he relies, and also actual portions of a specimen. In the course of his accompanying letter he makes some remarks upon the collection of specimens which it seems desirable to bring to the notice of field botanists. The following is a free translation:

" With reference to my help in the elucidation of the British Mints, my humble powers are at your disposal, but I must have for examination complete and ample material, for in the case of so critical a genus, little can be done with single specimens when the Mint-flora of the region has not yet been worked out. The plants collected must be as complete as possible, showing clearly the middle stem-leaves and the terminal inflorescence; otherwise they cannot be determined.

" You could render a great service to science, if you would make a collection of the wild Mints of the British Isles. For this purpose, it is less useful to collect single specimens from numerous localities, than to procure a full supply of examples from a few areas which are rich in Mints. I have obtained the best results by collecting some hundreds of specimens from an area of at most 4 or 5 square miles; in this way one can get the best idea of the prevailing types, and determine the hybrids; while a few single specimens from such an area often allow of no certain determination.

" In the preparation of specimens, the only care to be taken is to see that measurements of the stem-leaves can be made; the setting of the leaves should not be altered, as it is often characteristic of a variety; while curved and longitudinally-folded leaves should not be flattened out. In short, the natural habit of the plant should be preserved as far as possible. The gumming-down of specimens renders the task of determination much more difficult, and is superfluous in private herbaria.

" If I am to be of any assistance to you in the working out of the British Mints, I must have a plentiful, well prepared collection in accordance with the above directions, so that I may be able to get a sufficient knowledge of the English Mint-flora, of which at present I know little. Existing herbarium material would not be of much use, as most botanists, not realising the rules which are made necessary by the critical nature of the genus, only collected Mints casually and often imperfect specimens thereof; so that even the largest herbaria give no certain view of the Mint-flora of individual regions. The English Mints must be newly and abundantly collected, if they are to be worked out with certainty."

Well, I am doing my best. Herr Trautmann is certainly right about the importance of collecting " populations " rather than outstanding specimens. He himself is faced with the fact that Hungary contains hundreds of *M. longifolia* forms, which hybridise freely; by getting all the forms from a small area, he feels that he can distinguish what he calls the " types " from their hybrids. As he already recognises 30 or 40 " types," he has his work cut out.

A. L. Still.

558/4d. New and Interesting Mints. *Mentha viridis*, var. **rugosa** Gadeceau. *M. amaurophylla* Timb., var. *β rugosa* Rouy. In early September of 1934, I came across a Mint at Grafham, Surrey, which I took to be a form of *M. cordifolia* Opiz (*M. spicata* × *rotundifolia*). Specimens were distributed by Mr E. C. Wallace, and came to Mr J. Fraser for comment. In his opinion the plant was *M. cordifolia*, and he suggested that it was near his variety *dourensis*. With this view I could not agree; the characteristic feature of var. *dourensis* is the long, slender spike; the spikes of the Grafham plant are short and stout. There are also differences in leaf-shape and stature. While looking through the Mints in Gadeceau's Hbm. at the British Museum, I found sheets of a Mint which correspond very closely with the Grafham plant, labelled as above. These were, with one exception, cultivated specimens, so I collected cuttings in early summer this year and grew them in my garden, in good clay-loam. In this way I was able to get specimens with good lower leaves, and these correspond even better with Gadeceau's sheets than the wild plant. There are small differences, but these are less than may be seen in specimens of, say, *M. spicata*, from different stations; and, in fact, less than those between the wild and garden specimens. The spikes of Gadeceau's plant are slightly longer than those of the Grafham plant, and the whole plant a little more compact with shorter foot-stalks to the lateral spikes. While these differences are not, in my opinion, important enough to invalidate the identification, they have perhaps some value when considering the possible origins of the colony. Last year, there was a single flowering spike of *M. alopecuroides* Hull in the middle of the very diffuse group of *M. amaurophylla*, var. *rugosa*; this year I could see no trace of it. The two Mints have some points of resemblance, but the latter is subglabrous. The likeness was observed

by Rouy, who gives a number of characters by which the two plants can be distinguished; he refers, of course, to the typical plant which has downy leaves and not to the variety; but the likeness is still there, and was noticed by several botanists when examining my specimens. Their opinions can be referred to in the Exchange Report of the B.E.C., 1934. Mr Pugsley saw the plant at Grafham in August this year and expressed the opinion that it could well be a hybrid between *M. spicata* and *M. alopecuroides*. That it should be an importation seems improbable; its distribution in France is very local, and I have not seen any specimens other than Gadeceau's in either British or foreign collections. It is a vigorous grower and spreads even more than *M. alopecuroides*, a fact which points rather to a hybrid than to a sport. It grows among brambles at Grafham, and reaches in some cases some 5 feet in height. In the garden under open conditions it grows well over 3 feet; the usual forms of *M. cordifolia* Opiz do not attain nearly this height. There can be no doubt that *M. spicata* and *M. rotundifolia* are concerned in its parentage. The scent is that of *M. spicata*, somewhat coarse. The stamens are strongly exserted. Flowers purple.

Gadeceau gives the following description:—"*M. viridis* L., 1. var. *rugosa*. Stem glabrous; leaves oval-elliptic, 25 to 40 mm. long, ending in an acute point, simply serrate, with unequal convergent teeth, wrinkled-rugose, deep green, glabrous above, slightly pubescent on the veins below, sessile or sub-sessile, with cordate base; spikes several at the summit of the stem, lanceolate, with compact whorls, the lower only spaced; calyx teeth lanceolate subulate, slightly ciliate; bracts linear lanceolate; appears to be fertile. Cultivated at Piriac (Loire Inf.) and the neighbouring villages as a seasoning for Limpets under the name of 'Limpet Mint.' Rouy (*Fl. de France*) connects my plant with *M. amaurophylla* Timb. as var. *rugosa*. My plant has not small, but cordate leaves. But the suspicion of hybridisation between *M. viridis* and *M. rotundifolia* seems to me plausible enough."

This description could not be bettered for the Grafham Mint. In the garden the leaves measured as much as 10 cm. in length.

A. L. Still.

558/4e. Mentha spicata Huds. Coldharbour Common, Surrey. In the Distributor's Report, 1934, this plant is mentioned as being contributed by Mr E. C. Wallace. Mr Fraser says, "The height of the stems and the narrowness of the leaves are notable, and I hope Mr Wallace will give an opinion as to any local causes that may have contributed to these excellent results."

This plant is in my opinion *M. spicata*, var. **angustifolia** Lej. = *M. Lejeuneana* Opiz and *M. spicata* Huds., var. *stenophyllon* Top.

In the same Report, Mr J. E. Lousley, speaking of his *M. longifolia* Huds., var. *pulverulenta* Strail, says, "The only other British station known to me is Tadworth, Surrey." etc., etc. In my view, these two plants are not identical. Among the forms of *M. longifolia* described by Topitz, the nearest to *M. pulverulenta* Strail seems to be

M. longifolia, var. *recta* (D.D.) Top., while the Tadworth plant has narrower leaves and is very near *M. Dossiniana* (D.D.), which Topitz puts (p.p.) under var. *jurana* (D.D.) Bq. I have seen sheets of *M. Dossiniana* and they agree well with the Tadworth Mint, of which I have another specimen from a local garden. According to Topitz, the same variety can occur either in the green or pulverulent state, even in the same colony.

In *Rep. B.E.C.*, 1932 (Plant Notes), Mr Fraser described a plant collected by Miss E. S. Todd at Sebergham, Cumberland, as a new variety under the name of *M. rubra* Sm., var. *Toddiana* Fraser. Subsequently he identified a Mint from Tresamble, W. Cornwall as the same variety. I had occasion to examine the specimens of these plants in Mr Fraser's Hbm. at Kew, and have regretfully to pronounce them to be both *M. piperita*, with the typical scent. I called Dr Turrill into consultation, and he agreed. In fact, the Sebergham plant is the exact double of a specimen of *M. piperita* collected in N. Aberdeen by Mr Fraser himself; the Cornish plant is a slightly different variety, but both, I think, could go under *officinalis* Sole. If a further differentiation is required the Sebergham plant could be called var. *poicila* Top., on account of its broader leaves. Topitz would, I think, include var. *subcordata* Fraser, with leaves rounded at the base, in the same variety.

A. L. Still.

558/7×4. Mentha aquatica L. × M. spicata Huds. The only Mints which are generally accepted as arising from this cross are the various forms of *M. piperita* L. From *M. aquatica* are derived the long petioles and habit of branching, and from *M. spicata* the spicate inflorescence and generally glabrous condition, and, presumably, the characteristic aroma. In addition to these forms, Topitz includes *M. citrata* Ehrh. as a variety. Several forms of Mint have recently come to my notice, which suggest that they are of the same parentage. To call them varieties (or forms) of *M. piperita* would probably lead to much misunderstanding, as this name has for so long been associated with Mints of a very special character. If, on consideration, the forms I shall mention are accepted as the same hybrid, they could be included with the Peppermints under some general name, such as, e.g. *M. aromatica*, in the same way as the *M. longifolia* × *M. aquatica* hybrids have been grouped under *M. dumetorum* Schultes. Most of the forms are rare, and I have not been fortunate enough to see all of them fresh; and under present conditions they remain as individual "problems."

1. *M. citrata* Ehrh. I think the inclusion of this is justifiable. It is usually almost completely glabrous, and the heads are less definite than in *M. aquatica*. The peculiar scent of bergamot is not confined to the true plants, as has been noted before. I think even Sole must have been confused about this, as he makes a statement in his well-known work that "*M. odorata* flowers at the end of July." *M. citrata* is one of the latest Mints to flower, not being at its best till well into September, like most of the Peppermints. His figure is quite correct for *M.*

citrata Ehrh. Possibly he had more than one form among his *M. odorata*. Certainly *M. citrata* lies very close to *M. aquatica*; the next form to be mentioned shows a further departure from this parent.

2. In "Plant Notes," *B.E.C. Rep.*, 1922, Dr Druce speaks of a specimen in his collection, gathered in 1843 by W. H. Coleman at Roydon, Herts, and labelled *M. citrata* Ehrh. Mr Fraser saw this specimen and thought it might be a hybrid, *M. citrata* × *M. rubra* Sm. I do not think it has been referred to since. I collected this plant on August 29th and September 29th, 1935, so it is a late-flowering form. In appearance it is a glabrous *M. aquatica*, with the characteristic odour of the species; but the inflorescence is a spike, varying in length, and more or less spaced below, as in *M. piperita*. The flowers suggest *M. rubra* Sm., but there is no indication of *M. arvensis*. The uppermost pair of leaves, subtending the first pair of floral cymes, is large. One stem bore an unusual inflorescence, this being branched, and strongly suggesting a rather poor specimen of *M. piperita*. It seems quite reasonable to suppose that this plant is a form of *M. aquatica* × *M. spicata*, of the same order as *M. citrata* Ehrh. Both the supposed parents grow fairly near, but I saw no *M. rubra* Sm. I have the plant under cultivation. It is almost entirely glabrous, even to the calyx teeth.

3. Mr N. D. Simpson and I collected a Mint by the Avon above Aveton Gifford, S. Devon, in August 1935. The leaves were elliptic, tapering to both ends, coarsely serrate, subglabrous, with long petioles. The inflorescence was sub-spicate, stout and blunt; calyx tubular, glabrous with a few hairs on the calyx teeth. There is a look of *M. piperita* about it, but it is less freely branched than is usual in that form and the scent is not typical, but more like that of *M. gentilis*. It is more of an intermediate in appearance than the forms previously referred to, and I cannot suggest any other parentage than the one we are considering. The accompanying Mints, which were not very near, were *M. aquatica*, *M. rotundifolia*, *M. verticillata*, and two forms of *M. gentilis*, both with included stamens. This character renders it unlikely that this last Mint is concerned directly; but the presence of *M. gentilis* goes to show that there must be, or have been, some *M. spicata* not too far off. There are houses within bee-range.

4. Mr G. M. Ash sent me for inspection a Mint from Bedwyn Brailes, Wilts, which had been shown to Dr Druce. His report was that it had the facies of *M. piperita*, but was too hairy for this and smelt like *M. spicata*. I told Mr Ash that so far as I could see it was an aberrant *M. piperita*; that is to say a hybrid of *M. aquatica* × *M. spicata* which had not the peppermint odour. I have not, so far, seen the fresh plant.

5. Dr Druce collected specimens from several localities in Scotland which he called *M. Fraseri*, and suggested that they were hybrids between *M. aquatica* and *M. piperita*. He says that they have leaves of varying degrees of hairiness, and less elegant in shape than those of *M. piperita*. If his view is correct these plants would come within the limits of the hybrid we are considering (*Rep.*, 1927, p. 315).

6. In "Menthae Britannicae," Mr Fraser suggests that *M. crispa* L. may be the same hybrid (*M. spicata* × *M. aquatica*). The peculiar laciniate form of the leaves is found in more than one species. *M. undulata* K., a *longifolia* form, shows this character, and also *M. spicata*, var. *lacerata* (Op.) Fraser. Topitz puts *M. crispa* L. as a var. of *M. aquatica*; I have seen a capitate form in the Brit. Mus. Hbm., which would justify this opinion; and also a verticillate form. Whether our plant from Wooler and elsewhere is the same as Topitz's plant is uncertain; the specimens I have seen dry are shortly spicate, or apparently so. Not having seen the plant fresh, I cannot express any opinion; the odour should give a good idea of the presence or absence of *M. spicata*.

The French botanist, Lloyd, attempted to cross these two species, and raised a number of seedlings. Some of these are to be seen among Gadeceau's Mints in the Brit. Mus. They are very varied in appearance, and in some cases the origin would hardly be guessed. So far as I remember, none of them are obviously Peppermint. In most, if not all, cases the seed-parent was *M. spicata*; but, unfortunately, Lloyd grew many kinds of Mints, and, judging from comments by contemporaries on the sheets, he was not very critical in his experiments; the pollen parentage is therefore not too certain.

A. L. Still.

558/10j. Mentha gentilis L., var. **Vesana** Lej. & Court. In South Wales last year I found a form of *M. gentilis* L., which differed a good deal from the plants which occur in Surrey and the eastern counties. On comparison I came to the conclusion that it was the same form which F. H. Davey and others collected in Cornwall, and which the late Arthur Bennett identified as *M. gentilis*, var. *Pauliana* F. Schultz. These Mints are much too hairy to agree with Schultz's description of his variety, which is said to be subglabrous; nor do they much resemble his type-sheets at Kew and S. Kensington. From the description given in Strail's "Classification," I had suspected that they might be var. *Vesana* of Lejeune and Courtois, which Strail identifies with *M. Crepiniana* (Dur.) and *M. postelbergensis* (Opiz). In Gadeceau's collection at S. Kensington there are sheets of *M. gentilis*, var. *Vesana* L. et C., which agree so closely with my plant from S. Wales that I have no doubt that this and the Cornish plants are to be placed under this variety or "form." Topitz (*Bot. Cent. Blatt.*, 1913) includes this in var. *stricta* (Beck.).

A. L. Still.

730/1c. Alisma ranunculoides L., var. nov. **angustissima** E. Vachell. Planta erecta nana. Folia omnia angustissime lanceolata petiolata. Laminae ca. 1-2 mm. latae, 15-20 mm. longae. (Folia primaria submersa linearia). Scapus 3-8 cm. longus, pedicelli 15-20 mm. longi. Carpelli obovati costati. Semina obovata atra. Typus in Herb. Mus. Brit. Kenfig Pool, Glamorgan, 7/8/1935.

The above description was drawn up from 30 plants deposited in the British Museum. They are never stoloniferous and very uniform in

leaf-width, the maximum width of the laminae being usually 1.0-1.5 mm. Abundant fruits are produced, distinctly tapering below and never sterile. According to Mr W. H. Pearsall no similar form has hitherto been described. Most of the following are merely ecological states: var. *natans* Gluck, all leaves floating, plant nearly always sterile; var. *zosterifolius* Fries, all leaves submerged, plant usually sterile; var. *terrestris* Gluck is a sub-terrestrial form with a rosette of aerial leaves. The var. *repens* (Davies) is always stoloniferous.

The plants grow abundantly in damp slacks on the Kenfig dunes and in small patches of water near Kenfig Pool in both of which situations the water-level varies considerably from year to year and even during different seasons of the same year. For this reason the same area which at one period of the year may be covered with lagoons full of the submerged forms of *Potamogeton gramineus*, *Apium inundatum*, *Polygonum amphibium* and *Ranunculus peltatus* may, when visited a few months later, be perfectly dry, and its exposed surface covered with the terrestrial forms of the same species. The water of Kenfig Pool is fresh, not brackish, and a certain amount of lime is present in the sand of the neighbouring dunes. This accounts for the abundance of *Hutchinsia petraea* on them.

E. Vachell.

737/9×2. P. gramineus L. × polygonifolius Pourr. (P. Seemenii Asch. et Graeb. Syn. Mitteleur. Fl., i, 1897, 335, var. lanceolatifolius (Tis.) Hagstr.).

This very rare hybrid has only once been previously recorded from the British Isles—see B.E.C. 1922 Rep., 631-2 (1923)—but recently Dr W. A. Sledge has sent me specimens gathered by him at Ballymalis, Co. Kerry, in August 1935. This station must be near that from which Dr Druce and Mrs Wedgwood collected the hybrid in 1921. It is extremely rare, even in Sweden, and as it is very similar to *P. gramineus* L., var. *graminifolius* (Fries) may be easily overlooked. It is, however, quite distinct and affords indubitable evidence of the influence of *P. polygonifolius*. The following description has been drawn up from the British plants collected by Dr G. C. Druce and Mrs Wedgwood, those of Dr W. A. Sledge and the scanty descriptions of Swedish material given by Dr Tiselius and Dr J. O. Hagström.

×P. Seemenii Asch. et Graeb. Stem elongated, branched, internodes fairly long—the lower and median ca. 8-10 cm.—with the habit of *P. graminifolius* Fries. Submerged leaves linear-lanceolate or broadly lanceolate, very gradually tapering from a rounded semi-amplexicaul base to an acute apex which is equally attenuate or shortly acuminate. Sometimes the base is tapering (lanceolate) and more or less decurrent, and occasionally the leaves are shortly but distinctly petiolate (up to 7 mm.). (This last character does not occur in *P. gramineus*). The majority are 7-veined, the midrib is broad, conspicuous and reticulate. The venation is very variable, even in the same leaf. The margins are generally *entire* but in many leaves they show *very few and exceedingly*

minute and irregular denticulations. In a few of the younger leaves of one of Dr Druce's specimens (W.880) these are *quite numerous and well-marked near the apex.* As a rule the leaves are long (to 10 cm. × 1 cm.), thin in texture, dark green.

The floating leaves are coriaceous, very uniform in shape, elliptic to elliptic-lanceolate, equally tapering to each end and very longly petiolate (5 cm.). Lamina ca. 6.0 cm. × 1.5 cm. The apex is acuminate. A few of the leaves show an asymmetric base—one margin being distinctly more curved than the other. (This character is frequently found in the fruits of hybrid Carices). The size varies between 5.0 × 1.0 cm. and 6.5 × 1.5 cm. The flowers are normally sterile, the peduncle swollen and the spike ± 17 mm. long. in those seen.

It has been thought that specimens collected by W. H. Beeby from Brousta Loch, Shetland, and described in his paper on the Flora of Shetland (*Scottish Naturalist*, January 1891) may have been the hybrid, *P. Seemenii*, as they are labelled "*P. polygonifolius* × *heterophyllus*" by the collector. They are now in Hb. Beeby (No. 1077) at the South London Botanical Institute, and were kindly sent me for examination. They afford not the slightest evidence of the influence of *P. gramineus*, and I have no hesitation in referring them to *P. polygonifolius*. Similar plants collected by R. W. Scully in the Long Range, Killarney, 1888, and mentioned in the *Journ. Bot.*, April 1890, are now in Hb. A. Bennett at the British Museum. I have carefully examined them and consider them to be unquestionably *P. polygonifolius*. Both Beeby's and Scully's plants possess a somewhat cancellate venation which is a quite normal character in the leaves of *P. polygonifolius* from deep peaty water. *P. Seemenii* should be looked for where a tributary stream of such turbid water enters the clearer water of river or lake in which *P. gramineus* flourishes.

W. H. Pearsall.

737/23. Potamogeton pusillus L. An unusual form of this species was collected by Dr Geo. Taylor at Yetholm, Roxburgh, on July 8, 1935. It differs from any British form of this species hitherto described in its long, very gradually tapering and very acute leaves and in the exceptionally strong development of its lacunar system. It bears a superficial resemblance to *P. pusillus* L., var. *lacunatus* (Hagström) Fernald, described and figured in "The Linear-leaved North American Species of Potamogeton" (Memoirs of the Gray Herbarium, III, 85, and Plates, 18, 30 and 35). In that variety, however, the entire space between the midrib and the lateral nerves is usually filled with bands of lacunae. When *P. pusillus* produces longer leaves they tend to taper more gradually to the apex but no British specimens I have seen show this tendency—or the strong bands of lacunae—in so marked a degree as do these plants. The stem is filiform, much compressed, the internodes are long—up to 9 cm.—and the sheets show only the immature peduncle (5 mm). In the absence of fruit I should refer these plants to *P. pusillus* L., var. *Berchtoldi* (Fieb.) Asch. et Graeb. Syn. Mitteleurop. Fl., 1897, 345 (*P. Berchtoldi* Fieber

Pot. Böhm., 1838, 40-41, pro parte). It is generally agreed that Fieber's *P. Berchtoldi* includes forms of *P. pusillus*, hybrids of that species with *P. Friesii* and—according to some French authors—hybrids of *P. obtusifolius* and *P. trichoides*. However, the *pusillus* forms have been separated under the above varietal name by Ascherson and Graebner and, pending subsequent emendation, should retain it.

W. H. Pearsall.

737/29. P. interruptus Kitaibel. It cannot be too often affirmed that this is not a separate species but merely a form of *P. pectinatus* L. Judging by the number of enquiries as to its characters and status it may be well to again set out its essential distinctions. According to the original description in Schultes, *Oesterreichs Flora*, 1814, 328, a plant with rather broad and elongated leaves and conspicuously interrupted spikes was meant—"Die Blumen in entfernt stehenden Querlen"—the whorls of flowers being distant. This character is further implied by the choice of the name *interruptus*—otherwise unintelligible. Ascherson (*Fl. Prov. Brand.*, 1864, 666) seems to have been the first to see that its characters were those of *P. pectinatus* and reduced it to a variety of this species—*P. pectinatus*, b. *interruptus* (Kit.) Ascherson. Since that date the majority of European authorities have retained it as such. In 1851, Babington established his *P. flabellatus*, which is now by common consent considered to be synonymous with *P. interruptus* Kit. In *Hooker and Arnott*, 1855, 479, we read "Mr Babington says of his *P. flabellatus* that the principal difference is in the earlier leaves, but that when in fruit it is very difficult to distinguish it from *P. pectinatus*." This was written 80 years ago, and during that period our knowledge of this genus has enormously increased, especially through the splendid work of the Swedish botanists Dr G. Tiselius and Dr J. O. Hagström. Examination of herbarium specimens of *P. flabellatus*, so labelled by Babington himself, shows conclusively that it is a form of *P. pectinatus*.

Respecting the fruits of this species there is the widest divergence of opinion in the literature. They are stated to be "Keeled on the dorsal margin" by Chamisso, E. Fries, Gussone, and others. On the contrary, Grenier, Marsson, Morong, Kihlman, and Vuyck describe them as being "without keel." Hagström, however, states (*Crit. Res.*, 1916, 41) "The cover of the putamen is always rounded without keel, and the flesh also has the same curvature, but in the *dried* state false keels are often formed, both dorsally and laterally." In any case it is, in my judgment, impossible to separate normal *P. pectinatus* from the f. *interruptus* by the character of the fruits alone. The basal stem-leaves of each are, however, much more reliable for diagnostic purposes; in both cases they are obtuse, but those of *pectinatus* are usually much narrower than those of *interruptus* and also more early deciduous. It is, perhaps, unfortunate that in Fitch and Smith (968) and Fryer (*Pots. Brit. Isles*, Pl. 57) only the upper part of the stem of *P. pectinatus* is figured, all the leaves being apparently alike in form—there is no inset

showing the very different obtuse basal stem leaves. On the other hand the figures of *interruptus* in both Fryer (Pl. 59) and Butcher (393) show separately the broad and obtuse basal leaves. The inference often drawn from these figures is that only *interruptus* possesses these leaves, which, of course, is not the case.

P. pectinatus has been described in my paper, B.E.C. 1930 Rep., 408-410 (1931), and under the var. *diffusus* Hagström is given f. *interruptus* (Kit.) Asch. That is the correct status of this plant, all its essential characters being those of *P. pectinatus*. This species has a world-wide distribution much more extensive than that of any other species of the genus and is extremely variable. The f. *interruptus* is chiefly found in streams with a strong current and its lengthened stem, longer upper internodes and leaves are the results of this. Its broad basal stem-leaves differ only from those of normal British forms of *P. pectinatus* in being wider and more persistent—often remaining green through the winter—whereas those of most other forms are early deciduous and therefore seldom seen. The characters to be looked for in f. *interruptus* are:—1. Distinctly well-interrupted spikes of large fruits. 2. An elongated stem, much branched, with long upper internodes (ca. 5 cm.) and lower longer. 3. Basal stem-leaves very broad and obtuse, upper stem-leaves long but narrower, branch-leaves very narrow. 4. Sheaths rather long. W. H. Pearsall.

753/46d. Carex acuta L., var. gracilescens Almq. This name was introduced to British botanists by Ar. Bennett, who added it to the 8th edition of the *London Catalogue* in 1886 (p. 33, No. 1582d; also ed. 9, 41, No. 1682d; 1895). He attributed the name to Almquist but neither Kükenthal, Salmon (*Journ. Bot.*, 1931, 234) nor I can find that Almquist ever published it. Krok (*Bibliotheca Botanica Suecana*, 1925) gives a list of Almquist's publications dealing with *Carex*, but I cannot find the name in any of these papers. It must therefore be assumed that Almquist merely suggested the name for the British plant submitted to him by Ar. Bennett, as mentioned by Bennett in 1915 (B.E.C. 1914 Rep., 170: "Agrees very closely with the Cambridgeshire specimens so named for me by Dr Almquist"). Evidently Bennett used some Cambridgeshire specimen as a working type, but unfortunately this specimen was not found by me when Herb. Bennett was examined, nor was it in Herb. C. E. Salmon, to which some of Bennett's specimens had been removed.

So far, therefore, the name has been a "nomen nudum," and invalid. Unfortunately it did not remain so, for in 1892 (B.E.C. 1891 Rep., 348) Bennett comments as follows on specimens sent in by A. Ley as *C. aquatilis*, var. *Watsoni*, from near Bala Lake, Merioneth, 10th July 1891:—"Leaves with revolute margins, a few of the female spikes with male flowers, stem triquetrous, upper part rough, fruits unripe, but with indications of veining, which would become more apparent as it ripened; with these characters one can but refer it to *C. acuta* L., var. *gracilescens* Almq." All except the first of these characters are those used to separate *C. acuta* from *C. aquatilis*, and this character of leaves with

revolute margins defines the variety. But again there is no specimen in Herb. Bennett (or Herb. Salmon) and I therefore would ask anyone to whom they may have been loaned to return them to the Herbarium of the British Museum, where they should be found.

Unless Bennett published the name with description before 1892—and I can find no such publication—this description of the Bala plant must count as the first valid publication. This is unfortunate since the type must then be the Bala plant and not the Cambridgeshire plant as intended and used by Bennett. It would probably be better to treat the name as *nomen dubium* until Bennett's specimens have been found, when a decision can be made which will not be liable to reversal.

A. J. Wilmott.

REVIEWS.

Orchis latifolia L. In a contribution to the *Journal of the Linnean* Society, January 1935, entitled "On Some Marsh Orchids," Mr H. W. Pugsley has challenged the accepted interpretation of *O. latifolia* L. and *O. incarnata* L., and has revised the European plants of this group. Pugsley's thesis is (1) that *O. latifolia* L. is the plant known in recent years as *O. incarnata* L., (2) that there is no evidence that Linnaeus ever saw a living Marsh Orchis with spotted leaves, and (3) that *O. incarnata* L. was described from a pink form of *O. sambucina* L. As to these propositions it may be said that there is ample justification for (1), but that (2) and (3) are not quite so certain. Of course (1) is the point that matters.

Pugsley gives a full and careful account of the pre-Linnean work done on the Palmate Orchids, and then, in complete detail, their descriptions and synonyms in all the publications of Linnaeus including these plants, namely, *Hortus Cliffortianus* (1737), *Species Orchidum* (1740), *Flora Succica* (1745), *Species Plantarum* (1753), *Flora Suecica* (1755), *Species Plantarum* (1763), with later MS. notes on an interleaved copy, and the *Mantissa* (1771). Of these, the important works are *Sp. Pl.* (1753) and *Fl. Suec.* (1755), in which last *O. incarnata* was first described.

For the purpose of clearness, let us call "X" the orchids which are generally known as *O. incarnata* L., with narrow cucullate leaves, unspotted, very hollow stems, and small flowers with the side-lobes of the lips reflexed, and "Y" the plants usually named *O. latifolia* L., with usually more lanceolate, flatter, spotted leaves, less hollow stems, and larger flowers with flatter lips, side-lobes not reflexed, and a strong pattern of double lines.

In *Sp. Pl.* (1753) the description of *O. latifolia* is, "Orchis bulbis subpalmatis rectis, nectarii cornu conico, labio trilobo lateribus reflexo, bracteis flore longioribus." Here nothing is said about spotted or unspotted leaves, but the reference to the reflexed side-lobes of the lips points to "X." The synonyms can mostly be identified as "X," though Bauhin *Pin.*, 85, is a plant with long spurs, Vaillant, Paris, δ, *O. palmata sambuci odore*, and ε *O. palmata palustris maculata*. This is a very indefinite plant, with "apparently clouded leaves, and very small flowers." It is of no evidential value at all.

The specimen of *O. latifolia* in the Linnean herbarium appears to be "X." The leaves are not typical, but the bracts and spurs are right, and it looks as if the side-lobes of the lips might be reflexed. On the whole it is most probable that the *O. latifolia* of *Sp. Pl.* (1753) is "X." Specimen and description point this way. If Linnaeus saw, as he probably did, "Y" plants at Fontainebleau (1738), and at Skåno (1749), they are not allowed for in his description.

In *Fl. Suec.* (1755) to the description of *O. latifolia* is added, with other items, "folia parum maculata." Then *O. incarnata* is described as "bulbis subpalmatis rectis, nectarii cornu conico, labio obscure trilobo serrato, petalis dorsalibus reflexis." Then "very much like the preceding, with these differences, the leaves unspotted, pale green, not dark green and spotted, the stem shorter by half, bracts hardly longer than flower or ovary, corolla pale flesh-coloured, not red, the two dorsal petals quite reflexed, not so spreading, the lip agreeing in structure." This last phrase may mean that the side-lobes of the lips in *O. incarnata* are not so spreading as in *O. latifolia*. The only synonym given is Seguier's *O. palmata lutea*, which is *O. sambucina*, of which species the description follows.

Here the giving to *O. latifolia* of spotted leaves brings in "Y." Pugsley says there is no evidence that Linnaeus ever saw a living Marsh Orchis of the "Y" type. But as we have no reference to plates which might be referred to "Y," it is preferable to suppose that Linnaeus is including a "Y" which he had seen somewhere. In Sweden "Y" appears to be found only in Skåno and Småland. Now the map in Jackson's work on Linnaeus shows that he visited both the districts in question, Småland in May 1741, and Skåno in May-June 1749. Moreover, in June 1738, Linnaeus spent some days about Fontainebleau, where there is plenty of "Y." And as Fries notes that "Y" in Scandinavia is "foliis submaculatis," this may account for the "folia parum maculata" of Linnaeus. On the whole, it may be suggested that Linnaeus, finding no more "Y" anywhere, concluded that it was a mere variant of "X," and dropped it from subsequent descriptions. If so, "Y" makes almost a casual appearance in *Fl. Suec.* (1755), and thereafter disappears. In *Sp. Pl.* (1763) no reference is made to spotted leaves for *O. latifolia*, and the MS. of the interleaved copy says, "folia non maculata," and in the *Mantissa* (1771) we have "foliis immaculatis."

It therefore seems certain that *O. latifolia* of *Sp. Pl.* (1753) is "X," and Pugsley's main thesis is established. This is no doubt a disconcerting conclusion, as all modern floras take *O. latifolia* as "Y." However, botanists ought to be well used to changes of nomenclature. They are part of the game.

What, then, is to be done with *O. incarnata*? Pugsley's contention is that Linnaeus was describing a pink form of *O. sambucina*. This may be so, but it is not certain. *O. incarnata*, in Linnaeus's description, has pale green leaves, a short stem, and short bracts. Now "X" tends to yellowish-green leaves, whilst the leaves of *O. sambucina* are rather dark, and not yellowish. As to the stems and bracts, there are plenty of short plants of "X" and plenty of tall plants of *O. sambucina*. The short forms of "X" often have short bracts, but the bracts of *O. sambucina* are usually very large indeed, larger than those of "X." Moreover, the specimen of *O. incarnata* in the Linnean herbarium is certainly not *O. sambucina*. All this supports the conclusion that Linnaeus in *Fl. Suec.* (1755) transferred "X" to his *O. incarnata*. His emphasising the "red" colour of *O. latifolia* points to "X" for the other species. If in

Sweden "X" usually had purple flowers, and Linnaeus had recently found some flesh-coloured specimens, he might possibly have confused them with the pink *O. sambucina*; but the reverse is the case. In Sweden the purple form of "X" is rare.

In *Fl. Succ.* (1755) the description of *O. sambucina* follows that of *O. incarnata*. The only difference of any account is that the lips of the former are said to be ovate. In both cases the bracts are said to be short, which is not the rule for either of them. In *Sp. Pl.* (1763) *O. sambucina* is put before *O. incarnata*, and an MS. note in the interleaved copy says "forte praecedenti varietas." In the *Mantissa* (1771) again "varietas forte proximae," i.e. *O. sambucina*. So, evidently, Linnaeus did somehow confuse *O. incarnata* and *O. sambucina*.

We conclude that, as there is nothing in Linnaeus's description to distinguish these two species, and as Linnaeus came to regard *O. incarnata* as merely a variety of *O. sambucina*, the name *O. incarnata* is quite otiose, and must be discarded. Alternatively, if Linnaeus in *Fl. Succ.* (1755) was describing a form of "X" as *O. incarnata*, he was really duplicating his *O. latifolia* of *Sp. Pl.* (1753), and again the name is otiose. So as *O. latifolia* is "X" we need a new name for "Y." This seems quite necessary on the literary evidence; but what actually Linnaeus himself regarded as *O. incarnata* remains to the present writer a complete mystery.

For the help of those who cannot see the original paper, it will be useful to give the complete scheme of revised forms from Pugsley's paper, omitting *O. sambucina*.

a. Latifoliae verae. 1, *O. latifolia* L. 2, *O. cruenta* Mull.
b. Sesquipedales. 3, *O. praetermissa* Druce. 4, *O. pardalina* Pugsley.
c. Majales. 5, *O. purpurella* Steph. 6, *O. majalis* Reich. 7, *O. alpestris* Pugsley.

On these some notes may be appended.

1. *O. latifolia*. This is the species named *O. incarnata* in all modern floras.

2. *O. cruenta*. This species is Northern (Scandinavia, Russia, Siberia). It has been claimed for Britain; but the British plants are *O. purpurella*. Pugsley reports the species also from the Alps.

4. *O. pardalina*. This is the species generally known as *O. latifolia*. In *Nederlandsch Kruidkundig Archief.*, 1933, Vermeulen discussed this form, especially in relation to *O. praetermissa*. He named it *O. latifolia*, var. *junialis*, making Reichenbach's *majalis* also a var. of *O. latifolia*, here following Kittel. He showed that the var. of *junialis* is identical with British "Y" plants. In *Journ. Bot.*, April 1934, these conclusions were given, with some good plates. It is to be regretted that Pugsley did not adopt Vermeulen's name *junialis*. It suits well with Reichenbach's name *majalis*; and it is a pity to have two new names for identically the same set of plants.

5. *O. purpurella*. Pugsley is inclined to think that this runs into *majalis*; but Vermeulen's figures in *Journ. Bot.* show how very different

is the structure of the leaves. *O. majalis* has broad leaves with usually very heavy crimson blotches all over the leaves. *O. purpurella* has smaller, less pointed leaves, usually narrower, with a very few tiny sepia dots, chiefly at the tips of the leaves. In a very few cases, the leaves have numerous spots, but these are quite unlike the *majalis* spots (being perfect circles, oblongs, etc.). Also the flower-colour and markings are quite different, and the diamond-shaped lip of typical *O. purpurella* is quite distinctive.

7. *O. alpestris* Pugsley. This is a new species, to include the very beautiful forms of the Alps of Central Europe. A careful study of these plants might very well result in the separation of some good varieties.

Turning to varieties, we have *O. latifolia*, β *Germanica* Pugsley. This includes the very tall plants, with long leaves and large bracts.

γ. *ochroleuca* (Boll). Flowers large and lemon or straw-coloured, a very handsome variety. This has been found by Mr J. E. Lousley, in plenty, in fens on the borders of Norfolk and Suffolk.

δ. *pulchella* (Druce). A form with bright purple flowers and very heavy lip-markings.

ε. *coccinea* Pugsley. This is the beautiful form with maroon-coloured flowers. It was named by Godfery forma *atrirubra*; but as he omitted a Latin description, Pugsley has renamed it.

In *B.E.C. Rep.*, 1915, Druce described a var. *dunensis* (of *O. incarnata*), giving Sands of Barry and Freshfield as localities. In *B.E.C. Rep.*, 1917, he gave as colours, white, rose, crimson to dark purple. This var. is evidently a rather dwarf soil-form of sand-dunes, whereas var. *coccinea* is a colour-variety, pure and simple, and may be dwarf or tall.

ζ. *cambrica* Pugsley. It is very doubtful whether this is anything but a colour-variety. Apart from sand-dunes, the purple-flowered form is found in many districts, and is frequent in East Anglia. In structure it does not appear to be different from the flesh-coloured forms in inland districts.

O. pardalina. There are three stations in S. Devon, two near King's Kerswell and one near Axmouth, where there are fine colonies of this species, no form of *O. maculata* being on the ground. Near Borth there is a very interesting colony of plants which will probably take rank as a new variety, growing where there are *O. elodes* and *O. purpurella*, as well as "X," but no *O. praetermissa*. Mr P. M. Hall saw these plants in 1935, and thinks they may be derived from "X" and *O. purpurella*, but with no influence of *O. elodes*.

O. purpurella, β *pulchella* (Druce). This form naturally falls here. It is really a form of *O. purpurella*, and not at all like *O. praetermissa*. It is almost always found growing with *O. purpurella*, or at any rate in the same geographical area. Godfery, from what he says in his Monograph, evidently agrees with this.

O. majalis, γ *occidentalis* Pugsley. This is a fine form occurring in Ireland.

Pugsley is inclined to put Godfery's " Mystery Orchis " (*O. latifolia*, var. *eborensis*) under *O. majalis*. The chief difficulty here is the time of flowering. It should probably be placed under *O. pardalina*.

T. Stephenson.

The writer of this review is much indebted to Mr P. M. Hall for criticisms and suggestions.

ABSTRACTS FROM LITERATURE.

A. J. Wilmott, assisted by Miss M. S. Campbell, P. M. Hall, J. S. L. Gilmour, and others.

Owing to the fact that two years' Abstracts are included in this number, it has been necessary to condense as much as possible. There is a considerable literature which has not been looked through, and the compiler would be glad to hear from anyone willing to undertake the abstracting of some of the periodicals. The Bibliography will be found at the end of the Abstracts.

GENERAL.

(A) MORPHOLOGY.

Inflorescence.—The Angiosperm inflorescence types are studied phylogenetically by Zimmermann (1935 A), who regards the cymose panicle as primitive and (p. 99) gives a diagrammatic figure which illustrates the relations between this and other types of inflorescence. The origin of the " flower " is also discussed.

Seeds.—Fruits and seeds of 306 species of weeds [nearly all British] are described and finely illustrated by Karsmo (1935).

Stomata.—The orientation of the stomata of many British species is described by Smith, G. E. (1935), who shows it to be related to the course of the underlying vascular system.

(B) ANATOMY.

For a comparative study of the endodermal anatomy of many British species of phanerogams see Rajkowski (1934).

(C) CYTOLOGY.

A table of the chromosome numbers of the angiosperms of Slesvig Holstein (Tischler, 1935: 4-24) includes a very large proportion of the species of the British Flora.

(D) ECOLOGY.

Arctic Vegetation.—A discussion of the factors responsible for the instability in arctic vegetation, which is in such strong contrast with the relatively stable plant formations of the temperate zone: Griggs, Robert F. (1934).

Beechwood (Chiltern Hills).—See Watt (1934).

Epiphytes.—A list of trees, and plants that have been found growing epiphytically on them, is given by Magocsy-Dietz (1935), many British species being mentioned.

Fen Deposits.—The controlling factors in the deposits of fen peat (studied near Ely) are discussed by Godwin and Clifford (1935).

Grassland.—Retrogression of permanent pastures in Devonshire is described by Fenton (1934).

Statistical methods of investigating the distribution of species in grasslands are described by Blackman, G. E. (1935).

Ungrazed grassland on limestone is described by McLean (1935).

Transitions from woodland and moorland to grassland have been studied in the Spey Valley (and elsewhere) by Fenton (1935).

Mountain Plants.—Dusseau (1934) shows that the leaves of many high alpine cushion plants (*Silene acaulis*, etc.) become mummified (without complete decomposition) and form a protection against rigorous climate.

Ruderal Plants.—The vegetation of footpaths, sidewalks, cart-tracks, and gateways is studied by Bates (1935).

Soil: Calcium Content.—The behaviour and chemical composition of various plants in relation to the calcium content of the soil is studied by Popovici (1934).

Hydrogen-ion Concentration.—Some relations to plant distribution are discussed by Emmett & Ashby (1934).

Transplant Experiments.—Third report on these experiments. See Marsden-Jones & Turrill (1935 B).

(E) PHYTOGEOGRAPHY.

FLORISTIC ELEMENTS.

Steffen (1935) discusses some of the floristic elements of the European flora, giving lists of the more outstanding species of each group. [Names sometimes condensed by A.J.W.]

1. Arctic Alpine.
2. Subarctic and Subarctic oreophile.
3. Pontic.
   - i. *Species of Steppes* and similar formations distributed over several floral regions. In addition to such species as *Silene Otites*, *Artemisia campestris*, etc., numerous common British species belong to this group, e.g., *Achillea Millefolium*, *Carex praecox*, *Galium boreale*, etc., etc.
   - ii. *Pontic-siberian*. The only "British species" in this group is *Linum perenne* L. [But our British plant is not the Siberian plant.—A.J.W.]
   - iii. *Pontic-mediterranean*—including *Hutchinsia petraea*, *Symphytum tuberosum*, *Trifolium ochroleucum*, and a second list of species more widely spread into Transcaucasia (or even occurring in Central Asia), including *Alsine tenuifolia*, *Aster Linosyris*, *Bupleurum tenuissimum*, etc.
   - iv. *Mediterraneo-siberian*, including *Carex humilis*; some stray into Central Asia and have their main asiatic area there, *Milium vernale* (*scabrum*) and *Verbascum Blattaria*.

va. *Aralo-caspian* (none British); and vb, also widespread into Siberia, or in Persia or Transcaucasia, including *Orobanche coerulea*.

via. *Pontic-caucasian* and vib *Pontic-transcaucasian*; vii. *Eu-pontic*; viii. *Pannonian*; ix. *Russo-pannonian* (Steppe); x. *Eury-pontic*, and xi. *Dacic and mösic*: none (of vi-xi) British.

4. Atlantic.

1a. *Eu-atlantic*, with compact distribution in Atlantic Europe (sensu Braun-Blanquet), and as appendices a *macaronesian* (Atlantic Is.) list, including *Asplenium marinum* and *Barbarea praecox*, which is probably a separate floristic-element, and a second list of species which more or less lead into the mediterranean element (including *Beta maritima*, *Ceterach officinarum*, *Crithmum maritimum*, *Cynosurus echinatus*, *Daphne Laureola*, *Brassica adpressa*, *Lagurus ovatus*, *Ophioglossum lusitanicum*, and *Umbilicus pendulinus*).

1b. *Sub-atlantic*, which stray into neighbouring regions.

1. *Atlantic-submediterranean*, including *Arabis scabra*, *Armeria plantaginea*, *Oenanthe crocata*, and many other British species.

2. *Atlantic-subarctic*, which reach some part of the sub-arctic region—*Armeria maritima*, *Atriplex glabriuscula*, *Cochlearia anglica* and *C. danica*, *Erica Tetralix*, *Hieracium Peleterianum*, *Isoetes echinospora*, *Saxifraga decipiens* and *S. hypnoides*, *Sorbus scandica* and *Utricularia ochroleuca*, and a few which also occur in high mountains of Southern Europe are perhaps best placed here (incl. *Arenaria gothica*).

3. *Atlantic-suboceanic*, including those species with distribution wider than Atlantic in *various* directions (found in areas with sub-oceanic climate), for which the climate of the "Litorina-period" may be responsible. This includes many British species—*Aira praecox*, *Alisma natans*, *Centaurea nigra* and *C. pratensis*, *Dianthus caesius*, *Galium saxatile*, etc., etc.

c. *Atlantic-mediterranean*, equally at home climatically in both regions—including *Arbutus Unedo*, *Luzula Forsteri*, *Ophrys apifera*, etc., etc.

d. *Atlantic-american* (really the true Atlantic, i.e., on both sides of the ocean)—*Carex arenaria*, *Drosera intermedia*, *Eriocaulon septangulare*, *Lobelia Dortmanna*, *Lycopodium inundatum*, *Myosotis palustris*, *Scirpus americanus*, *Sisyrinchium angustifolium*, *Spartina alterniflora* and *S. stricta*, *Spiranthes Romanzoffiana* and *Statice Limonium*.

Many British species (and European floristic elements) are mentioned also by Suza (1935) in discussing the xerotherm areas and steppe types of S.W. Moravia (with distribution maps).

Very many British species are dealt with by Lange (1935) in grouping the species of the Jemtland flora according to their distribution in that area (with many maps).

ORIGIN OF THE BRITISH FLORA.

A whole day discussion of this problem took place at the Royal Society, the morning devoted to papers and the afternoon to discussion (PRS.Lond., Ser. B, *118*, 197-241). The Tertiary floras, with decreasing Chinese element as climate cooled until immediately before the glacial period when the flora was essentially the same as now, were discussed by Mrs Reid. The climate and geography of the Ice Age were discussed by Prof. Boswell, whose tentative maps of the ice of various periods left ice-free areas far greater than the usual maps summating all glaciations, which "do not furnish a true picture of events." Miss Chandler argued for complete extinction, citing southern records of boreal plants such as *Betula nana* in S. Devon [but ignoring the Atlantic *Salix atrocinerea* shown in the same slab of rock!]. Dr Godwin discussed the post-glacial floras as reconstructed from pollen-analyses of peat, but these do not give indication of conditions *during* glaciation. Wilmott (1935 A), on grounds of taxonomy and distribution, considered that much of the flora survived glaciation in the British Isles and that the climate was not as severe as generally considered. Salisbury (1935) assumed 'age-long 'winters' of the glacial epochs" and the certain extinction of southern and oceanic types. Du Rietz gave abundant evidence that the Scandinavian flora was not extinguished in glacial times—"it seems . . . certain that a very great part of [the Scandinavian] flora survived at least the last glaciation on ice-free coast areas in Norway . . ."

STUDIES OF PEAT.

Snowdonia.—Woodhead and Hodgson (1935): dating only possible by comparison with other peats and results indefinite.

ADVENTIVES.

A short account of alien plants noticed in Havelland, Brandenburg, is included in a general history of the flora by Mrugowsky (1935).

(F) TOPOGRAPHICAL.

British Isles.—A pocket book for the ready identification of 844 species of British plants, illustrated by Miss Trower and Miss Weston, has been produced by Skene (1935).

The changes in the flora during the last 50 years are discussed by Wilmott (1935 B).

Don, George: *Herbarium Britannicum*.—Notes on this series of exsiccata, with details of labels not available to Dr Druce in his account of an incomplete set, are given by Evans (1934).

English Names.—Second volume of the late Canon Fisher's work noticed in Vol. x, 807.

Wild Flower Preservation.—A considerable correspondence on this subject from the most diverse points of view is to be found in Gard. Chron., *96*, see Index, p. vii (1934).

S. Devon.—A list of plants seen in the neighbourhood of Salcombe is given in Pugsley (1935 B).

N. Devon.—The aboriginal flora of Lundy has an Oceanic facies, which would mean that since its final appearance above the sea and becoming capable of supporting vegetation Lundy has not been directly joined to the mainland. This theory is supported by the absence of trees except for quite recent introductions and by the absence of all reptiles and many mammals. The presence of Neolithic artefacts argues the greater proximity of the mainland towards the close of the Glacial Epoch but not necessarily complete connection with it. Most of the native species were probably brought by birds, of which there is a large resident population, and also Lundy lies in the main stream of migration.—Elliston Wright (1935 A).

N. Somerset.—The effects of drought on the vegetation of reservoirs were studied in the autumn of 1933 and dry season of 1934. At Blagdon many young plants of *Stellaria aquatica* had the leaves blotched with dark purple, thought by Kew to be due to the presence of anthocyanin pigment. At Chew Magna *Polygonum amphibium* had its stems surrounded by pale brown corky masses due to a Polyzoon, *Plumatella fungosa*. A great amount of *Barbarea vulgaris* flowered at Chew Magna in 1934 although scarcely seen there in 1933.—Thompson (1935).

Dorset.—Ecology. South Haven peninsula (Studland Heath). The general ecology of the flowering plants and ferns is described by Good (1935).

London Area.—Botanical Records of the London area, 1934: Part 6.—London Naturalist Reprints, No. 15.

Chiltern Hills.—The vegetation, with special reference to the beech-woods and their seral relationships, is studied by Watt (1934).

Yorkshire.—The vegetation of Redcliff Sand (Humber) is described by Good & Waugh (1934).

Wales.—Catalogue of the Welsh flora with much additional information by Hyde & Wade (1934). See Vol. x, p. 805.

Cardigan.—Flora of the county by Salter (1934). See B.E.C. Rep., Vol. x, p. 805.

Dovey Estuary: Salt Marshes.—The rates of vertical accretion, horizontal extension, and scarp erosion are detailed and discussed by Richards (1934).

Moray.—Flora of the county by Burgess (1935). See B.E.C. Rep., Vol. x, p. 807.

Ireland.—An excellent tourist's guide to the whole country has been produced by Praeger (1934) on the lines of his earlier flora of the west

of Ireland. Recent discoveries have shown that many interesting and critical members of the Irish Flora have a wider range of distribution than was previously known. This result is almost entirely due to the work of Praeger (1935).

Down: Mourne Mountains.—Vegetation maps by Armstrong, Ingold & Vear (1934).

(G) SYSTEMATICS.

Ranunculaceae. Floral anatomy detailed (many fine plates) by Brouland (1935): *Aquilegia vulgaris* (p. 17), *Helleborus foetidus* (p. 44), *Eranthis hyemalis* (p. 49), *Delphinium Ajacis* (p. 55), *Trollius europaeus* (p. 74), *Caltha palustris* (p. 82), *Actaea spicata* (p. 90), *Anemone nemorosa* (p. 112), *A. Pulsatilla* (p. 122), *Clematis Vitalba* (p. 131), *Thalictrum minus* (pp. 150, 149), *T. majus* and *T. alpinum* (p. 148), *Myosurus minimus* (p. 152), *Ranunculus repens* (p. 174), *R. acris* and *R. sceleratus* (p. 184), *Ficaria* (p. 200). As a result of the study changes in classification are suggested (p. 243), notably placing *Actaea* in *Helleboreae*; *Ficaria* would be reunited to *Ranunculus*.

3/1. Anemone Pulsatilla L. A great amount of information (genetics, phylogeny, ontogeny, anomalies, etc.) concerning this species is given by Zimmermann (1935 B) in a paper dealing with *Pulsatilla vulgaris* and some of its many subspecies.

6. Ranunculus L. Petals: the structure of the starch layer in the glossy petals of the British species is described by Parkin (1935).

6/33. R. Ficaria L. occurs in two forms, one with bulbils in the axils of the leaves, the other without. The bulbil-producing plant is tetraploid (2n = 32) and is described as a new var. [33e] **bulbifera**: distribution unknown, less common than the typical species and usually, but not always, found in shady places. In this form reproduction is almost entirely vegetative and the number of viable seeds produced is very small. Tables of counts of viable and abortive seeds and lists of visiting insects (48 species were seen in 35 observations) are given.—Marsden-Jones (1935 B). The flower variation is described by Alkins (1934).

7/2. Caltha radicans Forst. has long been known from a single station on L. Erne but is now found to be spread all over Ireland, having been recorded from 36 v.-cs. It is not a montane species and is particularly abundant on lake-shores in the Central Plain. In addition to a tendency to hybridise with *C. palustris*, *C. radicans* is very variable: the most persistent characters are the single-crowned, unbranched rootstock and very short lowest internode. —Praeger (1935).

21. Papaver L. Four species are critically discussed, and a key to the species and varieties given by Mosseray (1934).

22. Meconopsis Vig. Monograph of the genus by Taylor (1934). *Meconopsis cambrica* (L.) Vig. is the only species of the section *Cambricae* (p. 20) which is confined to western Europe; all the remaining species are exclusively Asiatic. The pre-Linnean synonymy is given in full: no varieties are recognised.

35/1. Nasturtium officinale R. Br. (*Radicula Nasturtium* Dr.). Cytology: three forms in Britain as on the Continent:—diploid 2n = 32, triploid 2n = 48, tetraploid 2n = 64. The diploid has widest range and except in the British Isles is the commonest. The tetraploid occurs only in the north, where it is as abundant as the triploid. Cultivated strains are all diploids originating at Erfurt, except the brown "winter" variety, which is triploid. —Manton (1935).

37/5. Arabis petraea Lam. Map of distribution in Moravia by Suza (1935: 480).

42/4. Alyssum campestre L. This is a *nomen confusum*, according to Turrill (1935 B). The earliest available name traced is *A. parviflorum* Fischer, ex M. Bieb. Fl. Taur. Cauc., *3*, 434 (1819).

44. Eropiula DC. Cytological and experimental investigations by Griesinger (1935). Of the four (Munich) strains cultivated some had chromosomes n = 12, others n = 20. Emasculated flowers produce no seed. Crosses between strains with the same number of chromosomes produced fully fertile F_1 with normal pollen; n12 × n20 gave much bad pollen and almost complete sterility; back crossing gave results only when the F_1 was used as pollen-parent.

45/5. Cochlearia anglica L. has been considered a southern plant in Ireland but is now known all round the coast, hybridising everywhere with *C. officinalis*. Var. *Hortii* Syme is considered a hybrid form.—Praeger (1935). [The true var. *Hortii* is the peculiar Merseyside uniform plant.—A.J.W.]

45/6. C. groenlandica L.? (*C. scotica* Dr.) occurs from Cork round the west coast to Antrim, crossing occasionally with *C. officinalis*.—Praeger (1935).

47/2. Hesperis matronalis L. Aljawdina (1935) describes the thickenings in the seed coat which act as lenses concentrating the rays of light, without which the seed will not germinate; the seed is negative to diffuse white light but positive to utraviolet rays.

49. Sisymbrium L. Chromosomes—*S. officinale*, n = 7 + 2 microchromosomes + 2-3 satellites, and 2n = 14 + 4 mc. + 4-6 satellites; *S. Irio*, n = 9 (8 large and 1 small), 2n = 18 (16 large and 2 small); *S. Sophia*, n = 10 + 1 satellite, 2n = 20 + 2 satellites; *S. Columnae*, n = 7 + 2 microchromosomes and 2n = 14 + 4 mc.; *S. Alliaria*, n = 18, 2n = 36.—Mayor (1934).

52/1. Camelina sativa Crantz. Chromosomes, n = 14, 2n = 28.—Mayor (1934: 87).

54. Brassica L. The chromosomal relationships of the Swede and Turnip groups are detailed by Catcheside (1934): Swedes, 2n = 36; Turnips, 2n = 20 (N.B., Cabbage, 2n = 18). The chromosomes are described in detail.

Cytological studies of various hybrids between *B. oleracea* (n = 9), *B. campestris* (n = 10), *B. napus* (n = 19), *B. nigra* (n = 8), and *B. juncea* (n = 18) are detailed by Nagaharu (1935). There is varying degree of incompatibility, and *B. campestris* × *oleracea* is very suggestive of *B. napus*, especially in one individual, and from this cross a tetraploid has been found among the cultures.

B. adpressa Boiss. Chromosomes, n = 7 + 2 satellites or 8 + 2 satellites; 2n = 15 + 4 satellites, but another plant (showing some sterility) had n = 9 + 3-4 sat., 2n = 18 + 6-8 sat.—Mayor (1934: 83).

55. Diplotaxis DC. Chromosomes—*D. tenuifolia* (p. 72), n = 10 + 1 microchr., 2n = 20 + 2 mc.; *D. muralis* (p. 81), n = 9 + 1 mc. + 4-5 satellites, and 2n double this.—Mayor (1934: other Spanish species detailed).

59. Capsella Medik. *Capsella Bursa pastoris* and *C. rubella* are critically dealt with by Mosseray (1935 B).

66/1. Teesdalia nudicaulis (L.) R. Br. Originally in the U.S.A. a ballast alien about Philadelphia, this species is becoming established in four eastern states: details of records given by Blake (1934).

76/3. Rapistrum rugosum (L.) All. Chromosomes, n = 18 + 1 microchromosome, 2n = 16 + 2 mc.—Mayor (1934: 86).

87. Helianthemum Mill. Three species and one hybrid are dealt with critically by Mosseray (1935 A).

87/2. H. Chamaecistus Mill. has been refound in Donegal and is undoubtedly native, not an introduction as suggested by the only previous finder, H. C. Hart, in 1893.—Praeger (1935).

92. Dianthus L. Rohweder (1934) gives much interesting information concerning variation, phylogeny, etc., in a long paper on this genus. Chromosomes given as:—*D. Armeria* (p. 256), n = 15; *D. deltoides* (p. 270), n = 15; *D. Caryophyllus* (p. 289), n = 45; *D. superbus* (p. 298), n = 15, but *D. plumarius* (p. 312), n = 45; *D. gallicus* (p. 307), n = 30; *D. gratianopolitanus* (p. 310), "form *typicus*," n = 45, but another Swiss form (as "*D. caesius* Herms," p. 309, and plate 1), n = 30.

The following hybrids between British species are dealt with:—("*D. caesius* Herms" × *D. plumarius*, p. 317, 2n = 75, n not found higher than 38); *D. gratianopolitanus* × *plumarius* (p. 318). Three "mutations" of *D. plumarius* were investigated and a large amount of cytological detail given in tabular form (p. 334) for each species.

92/1. D. CAESIUS Sm. Map of distribution in Moravia by Suza (1935: 480).

96/1. SILENE MARITIMA With. Additional studies of genetics of colour, etc.—Marsden-Jones and Turrill (1935 A). Anatomical differences from *S. Cucubalus* are detailed by Millner (1934: 94).

96/2. S. CUCUBALUS Wibel. ("*vulgaris* Moench"). Genetics of colour, indumentum, and vegetative parts.—Marsden-Jones and Turrill (1934). Anatomy compared with *S. maritima* (q.v.).

101. STELLARIA L. Chromosome numbers given by Peterson (1935) include:—*S. nemorum*, 2n = 26; *S. media*, 2n = 36-42 (Heitz, 1926), n = c. 20 (Rocén, 1927), 2n = 44 (Peterson, 1933); *S. neglecta* (2n = 22, Peterson, 1933) but a "v. *grandiflora* (Ten.) Bég., 2n = 44; *S. apetala* Ucria and *S. pallida* Piré, 2n = 22; *S. holostea*, 2n = 26 (but n = 10, Rocén, 1927); *S. graminea* L. (n = 13-14, 2n = 26-28, Heitz, 1926), ♀ and ♂, 2n = 26; *S. palustris* Ehrh., 2n = ">100?"; *S. uliginosa* Murr., 2n = 24 (24-26, Heitz, 1926).

101/3. S. MEDIA Vill. The effect of varying light intensity, root medium, dampness of air, temperature, amounts of nitrogen, phosphorus and calcium, pH., and follicle-hormone ("progynon") upon the flower formation, are detailed by Hitzer (1935). The species does not behave like most others so far studied, in which by changing the conditions vegetative growth and flowering can be increased or depressed. *Stellaria media*, after forming a somewhat variable (4-12) number of pairs of leaves, passes into flowering whatever conditions it was given.

102/2. ARENARIA CILIATA L. The treatment of the Ben Bulben plant as a distinct subspecies (*hibernica* Ostenf. & Dahl.) is confirmed by Nordhagen (1935: 30), who places *A. norvegica* also under this species as subsp. *norvegica* (Gunn.) Fries. Four other subspecies are also recognised, and the allied *A. cylindrocarpa* Fernald is shown to be *A. humifusa* Wahlenberg.

102/7. A. PEPLOIDES L. (*Halianthus peploides* (L.) Fr.). Wide distribution in the Arctic detailed by Tolmatchew (1934), but with broken distribution elsewhere.

103. SAGINA L. The extreme variability in this genus is caused by the influence of various factors. For example, *S. nodosa* Fenzl is normally glabrous but var. *glandulosa* Bess. occurs less often and both forms grow intermixed. There is also variation in the number of stamens, styles, petals, and sepals. Wet conditions induce lengthening, light intensity induces shortening of the internodes. Var. *moniliformis* Lange is a prostrate xerophytic form, shy flowering but with specialised development for vegetative reproduction. An account of all the species of Sagina noticed in N. Devon and the variations, illustrated by photos, is also given.—Elliston Wright (1935 B).

111/1. Elatine Hydropiper L. has spread from its aboriginal localities (L. Neagh and two lakes in Co. Down) along canals made 100 years ago, east to Belfast and south to Newry: near the latter the plant occurs in a canal for 15 miles.—Praeger (1935).

111/2. E. hexandra L. A note on its forms by Goffart, Maréchal, et Sternon (1935).

112. Hypericum L. Noack (1934) continues his studies of *Hypericum* crosses with an account of hybrids between *H. acutum* (i.e., *H. tetrapterum*), *H. montanum*, *H. quadrangulum*, *H. hirsutum* and *H. pulchrum*, between which crosses in all possible combinations were attempted. Reciprocal crosses, *ac.* × *mont.*, *mont.* × *quad.*, *hirs.* × *pul.*, show differences in seedling stage; *ac.* × *mont.* only slight fertility in ♀—back crossing shows strong splitting; *hirs.* × *pul.* quite sterile; *ac.* × *quad.* ± fertile. Ability to cross and fertility of the hybrid varies as the affinity.

Similar studies are detailed by Herbst (1935). The following crosses are described:—*H. acutum* ♀ with *montanum*, *perforatum*, and *quadrangulum*; *H. hirsutum* ♀ with *acutum*, *montanum* and *quadrangulum* (these never complete result, apparent setting being followed by no viable seed, the embryo rotting); *H. montanum* ♀ with *acutum* (good), *perforatum* and *quadrangulum*; *H. quadrangulum* ♀ with *acutum*, *hirsutum*, *montanum* and *perforatum*. *H. acutum* × *hirsutum* and *montanum* × *hirsutum* did not set. Hybrids with *H. acutum* ♀ are often ± pale green (*acutum*-bleaching); various hybrids are green and white variegated.

125. Linum L. Many British species and varieties are included in notes on the Bulgarian Flora by Stojanoff, etc. (1934), a new form (f. *micrantha*) of *Linum angustifolium* being described.

125/4. L. usitatissimum L. Linseed production in the United States is described by Dillman (1935; in U.S. Department of Agriculture Farmers' Bulletin, No. 1747).

147/2. Genista pilosa L. Map of distribution in Moravia by Suza (1935: 481).

150/1. Cytisus scoparius (L.) Link. The natural distribution in Virginia is considered in relation to its soil reaction. Its acid preference is less pronounced than has been stated by Professor E. T. Wherry. Broom is becoming established in Canada and the U.S.A. slowly, and only along or near the coast line.—Turner, T. W. (1935).

153. Medicago L. The history and world distribution of the various cultivated forms of lucerne and its hybrids with *M. falcata* are described in detail, with maps, by Klinkowshi (1933). *M. sativa* is considered native from Persia and Iraq in the south to just N. of the Caspian Sea in the north, and from Turkey eastwards to the borders of Tibet.

154/2. Melilotus alba Desr. The relative growth rates and interdependence of tops and roots of the "biennial white Sweet Clover" are discussed by Martin (1934).

155/16. Trifolium repens L. The relation of leaf size to root structure is studied by Bates (1934). This species is very sensitive to drought when on light soils: for a study of the effect of conditions on it see Nilsson-Leissner (1935).

166/2. Astragalus alpinus L. In Arctic America the leaves are sometimes greyish but the canescence is insufficient to warrant a varietal name. The hairiness of the pods is variable, usually black-hairy, sometimes brownish and even whitish.—Malte (1934: 179). [Field observations on these points in this country are desirable.] Distribution: map of occurrence in North America by Rousseau (1933: 23).

170. Coronilla L. Monograph by Uhrova, A. (1935). A large number of subspecies, varieties and forms of *C. varia* L. are described.

178/26. Lathyrus niger Bernh. The mechanism involved in the swelling and shrinking movements of the pods of this (in Britain rare or extinct) plant is the subject of a detailed investigation by Glage (1934).

185. Rubus L. Several British plants bearing names published by Genevier have been compared with types in Herb. Genevier by Barton and Riddelsdell (1933), with the result that *R. cariensis*, *anglicanus*, *sertiflorus*, *mutabilis*, *nemorosus*, *nutans*, *plinthostylus* and *horridicaulis* disappear from the British list. *R. gymnostachys* Genevier is a legitimate name based on type specimens now in Herb. Mus. Brit., but the species does not occur in Britain.—Barton and Riddelsdell (1935 A).

185/1. R. idaeus L., f. inermis Lej. & Court. Hruby, J. (1934 A: 381) places under this specimens from "Misk Hills nr. Hucknall, Notts (leg. R. Bulley, distrib. 1928," as var. *obtusifolius* Willd.): the form is recorded for Hungary, Spain, and N. Italy.

185/8. R. opacus Focke. Arbrook Common, Surrey (leg. Catcheside, 14/8/1926, as *R. integribasis* Müller ?, Wats. E.C.).—Hruby, J. (1934 A: 382).

185/11. R. altiarcuatus Bart. & Ridd. (1933: 198)—*R. cariensis* Rogers Handb., non Rip. & Genev.

185/12. **R. confertiflorus** Watson. This species has previously been known as *R. holerythros* Focke, but that species is not British. Recorded from v.-cs. 16 and 17, it has an affinity with *R. gratus* and a hybrid with *R. Marshalli* has been found.—Watson (1935 A).

185/18. R. Lindleianus Lees. By stream, Polperro, E. Cornwall (leg. Rilstone, 7/1928, no. 488: BEC., 1928 distr.).—Hruby, J. (1934 A: 386).

185/19. R. ARGENTEUS W. & N., var. ARGENTEUS (W. & N.) Sudre, f. GENUINUS Sudre. Fox Down, Cissbury, v.-c. 13 (leg. Riddelsdell, 7/1926, BEC., 1925 distr.).—Hruby, J. (1934 A: 386).

185/19c. —— —— var. **gneissogenes** Sudre. Durdham Down, Bristol, W. Glos. (leg. White, 7/1927. "Pan. grown abnormal," Wats. E.C.).—Hruby, J. (1934 A: 386).

185/19d. —— —— var. **separinus** Genev. Headley Heath, Surrey, v.-c. 17 (leg. E. C. Wallace, 8/1928: ref. 2; Wats. E.C.).—Hruby, J. (1934 A: 387).

185/27. R. BAKERI F. A. Lees. This name is rejected as a *nomen confusum* on the grounds that the gathering on which Lees' description was based was a mixture; its place is taken by

185/27. **R. pistoris** Bart. & Ridd., recorded from v.-cs. 38, 39, 41, 58, 62, 63, 98;

185/27(2). **R. Bakeranus** Bart. & Ridd., of the London Commons, v.-cs. 16 and 17, with a var. b. *milcombensis* Bart. & Ridd., in v.-c. 23; and

185/27(3). **R. fumarius** Bart. & Ridd., recorded from v.-cs. 64, 65, and 69b: = *R. Bakeri* F. A. Lees, f. *elongata* Rogers: closely related to *R. Lindebergii* P.J.M.—Barton and Riddelsdell (1935 B).

185/45d. R. GODRONII Lec. & Lam., var. **ellipticifolius** Sudre, f. MACROBELOPHOROIDES Hruby. Sibford Heath, v.-c. 23 (leg. Riddelsdell, 8/1927, B.E.C. [1928: as *R. Godroni*]. "Pet. broad, short pale, sep. refl."—forms the transition from var. *ellipticifolius* Sudre (term. lflts. ovate-rhombic, base cuneate-narrowed not rounded, with long "abgesetzter" point) to var. *propinquus* P. J. Müll. (infl. very thick, short, large flowered, thickly spreading hairy)—like f. *macrobelophorus* Sudre, has numerous long, strong prickles, broadly compressed at base, on the inflorescence and flowering branches.—Hruby, J. (1935: 172).

185/47c.—R. ULMIFOLIUS Schott, var. **anisodon** Sudre, f. GENUINUS Sudre. Arbrook Common, Surrey (leg. Catcheside, 8/1926, as *R. thyrsoideus* Wimm., Wats. E.C.). Passes into var. *angustifolius*.—Hruby, J. (1934 A: 387).

—— —— f. LONGIPETIOLULATUS (Müll. & Timb.). Banstead Downs, Surrey, v.-c. 17 (leg. Wallace, 8/1926; Ref. 24, as *R. rusticanus* Merc., Wats. E.C.), with more narrowed terminal leaflets.—Hruby, J. (1934 A: 387).

185/56b. R. SCHLECHTENDALII Whe., f. ANGLICUS Sudre. Highmoor Wood, Almeley, v.-c. 36 (leg. Riddelsdell, 9/1926, as *R. mucronatoides* A. Ley, B.E.C. 1928 distr.). Not belonging to *R. mucronifer* Sudre, f. *mucronatoides* (A. Ley), because the term lflts. of the turion leaves are ovate-round with projecting apex, but here are longish obovate with weakly cordate base with broader and longer almost truncate apex.—Hruby, J. (1934 A: 386).

—— —— f. GENUINUS Sudre. Freeland, v.-c. 23 (leg. Riddelsdell, 6/10/1926, B.E.C. 1928 distr.).—Hruby, J. (1934 *A*: 386).

185/63(2). R. GRISEOVIRIDIS Bart. & Ridd. (1933: 204).—*R. adscitus* auct. angl. plur., non Genev.

185/63. R. ADSCITUS Genev. *R. macrophylloides* auct. angl. p.p. Devon and Cornwall.—Bart. & Ridd (1933).

Three different brambles have come to be known by this name in Britain. True species occurs in v.-cs. 1-5, 10, 69. The second sheet issued in the Set of British Rubi under this name from Dorset is 185/63(3). **R. prolongatus** Boul. & Let. in Corbière's Fl. de Normandie (1893), 203, treated by Boulay as a subspecies of *R. hypoleucus*. This occurs in v.-cs. 1, 4, 9, 14, 16, 17, 35, 36, 41, 45, 46, 49. The third plant often determined by Rogers as *R. adscitus*, but not issued in the Set, is now described as 185/56(2). **R. conspersus** Watson. It is best placed in the *Vestiti* near *R. Schlechtendalii* and is distributed over an area of 150 square miles in N. Hants, W. Sussex, and Surrey.—Watson (1935 B).

185/63(4). R. MICANS (Godr.) Sudre, var. MICANS (Godr.) Sudre, f. OBSECTIFRONS Sudre. Shotover, v.-c. 23 (leg. Riddelsdell, 8/1926, as *R. Powellii* Rogers f., B.E.C. 1928 distr.). By the prickles and glands not possibly *R. Lejeunii* Whe., f. *Powellii* (Rogers).—Hruby, J. (1934 B: 364).

185/67. R. VESTITUS W. & N., var. VESTITUS (W. & N.), f. PILIFER Sudre. "Wood, Fittleworth, v.-c. 13 (leg. Riddelsdell, B.E.C. 1928 distr., as *R. leucanthemus* P. J. Müller ?)"—Hruby, J. (1934 B: 359).

185/72. R. LASIOCLADOS Focke (=*R. vestitus* × ? *Winteri* Sudre). Paddlesworth Court Wood, v.-c. 15, 7/1927 (leg. Riddelsdell, B.E.C. 1928 distr.).—Hruby, J. (1934 B: 359).

185/84. R. APICULATUS Whe. f. CINEROSUS Rog. Malpus, v.-c. 58 (leg. Riddelsdell, 8/1926, as *R. Newbouldii* Rogers, B.E.C. 1928 distr.). "From the weak turions before us certainly not *R. Newbouldii* (Bab). Rog., in which, besides, the turions are slightly furrowed." —Hruby, J. (1934 B: 363).

185/84e. R. OBTRUNCATUS (P.J.M.) Sudre, var. OBTRUNCATUS (P.J.M.) Sudre, f. ANGUSTICUSPIS Sudre. Freeland, v.-c. 23 (leg. Riddelsdell, 7/1917, as *R. setulosus* Rog. f., B.E.C. 1928 distr.).—Hruby, J. (1934 B: 366).

185/85. R. MELANOXYLON M. & W. Stoke Wood, near Oxshott, Surrey, v.-c. 17 (leg. E. C. Wallace, 7/1927, Ref. 30, Wats. E.C.). Moderately typical.—Hruby, J. (1934 B: 365).

185/89. R. INFESTUS Whe., var. DREJERI G. Jensen (teste W. M. Rogers). Durdham Down, Bristol, W. Glos. (leg. White, 8/1927, Wats. E.C.).—Hruby, J. (1934 B: 364).

185/91. R. ERICETORUM Lefv. ex Genev. *R. anglicanus* Rogers. Bart. & Ridd. (1933: 208). ×*mucronatus*, var. *nudicaulis* (Bart. & Ridd., 1933: 220). ×*pubescens*, var. *subinermis* (Bart. & Ridd., 1933: 220).

185/93. R. RUDIS (W. & N.), var. RUDIS (W. & N.) Sudre, f. ARGUTIFOLIUS M. & Lef. "Colan, near Newquay, W. Cornwall (leg. C. C. Vigurs, 7/1909, Wats. E.C., Herb. Rilstone, as *R. plinthostylus* Genev.). Since the turions are almost glabrous and the general appearance ('habit') does not correspond to the *Hystrices*, I put the plant to the *Rudes*."—Hruby, J. (1934 B: 365).

185/94(2). **R. Schmidelyanus** Sudre, f. SILVULICOLUS Sudre. Hedge by a wood near Walton-on-the-Hill, Surrey (leg. D. G. Catcheside, 7/1926; Watson B.E.C. as *R. cenomanensis* Sudre, var. *Bloxamianus*). Not *R. cenomanensis*, because the term. lflts. of the leaves of the sterile shoots are quite different and the toothing coarse.—Hruby, J. (1934 B: 362).

185/96. R. REGILLUS A. Ley. This is placed by Hruby, J. (1934 B: 364) as a forma of *R. fuscus* Whe., var. *apiculatiformis* Sudre.

185/99(3). R. GRANULATUS M. & L., f. MENTITUS P. J. Müller. Wood by Green Wrythe Lane, Mitcham, Surrey (leg. E. C. Wallace, 8/1927, "Ref. 43 f.?," Wats. B.E.C.). "Difficult to determine without flowers."—Hruby, J. (1934 B: 364).

185/99(3)b. —— —— var. **traunsteiniensis** Kaufm. Arbrook Common, Surrey (leg. E. C. Wallace, Ref. 12).—Hruby, J. (1934 B: 364).

185/99(3)c. —— —— var. **obovatifrons** Sudre. Colley Hill, Surrey (leg. E. C. Wallace, Ref. 35).—Hruby, J. (1934 B: 364).

185/100. R. BABINGTONII Bell. Salt. Downs near Devil's Dyke, v.-c. 13 (leg. Riddelsdell, 7/1926, B.E.C. 1928 distr.)—Hruby, J. (1934 B: 365).

185/102. R. LEJEUNEI Wh. There has been confusion between this species and *R. ericetorum* Lef. due to errors in the original description of the former. Focke finally decided that the bramble gathered by him at Godalming and in Dorset was *Lejeunei*, not *ericetorum*.—Watson (1935 B).

185/104. **R. Moylei** Bart. & Ridd. (1933: 210). *R. ericetorum* auct. angl. non [Lefèv.] Genev. b. *cuneatus* (Rogers & Ley) Bart. & Ridd. (1933: 221). c. *scoticus* (Rogers & Ley) Bart. & Ridd. (1933: 221).

185/106. R. WEDGWOODIAE Bart. & Ridd. (1933: 212). *R. mutabilis* Rogers' Handb. non Genev. ×*rusticanus* (Bart. & Ridd., 1933: 221). b. Var. *Naldretti* (White) Bart. & Ridd. (1933: 221). e. Var. *Sabrinae* Bart. & Ridd. (1933: 212).

185/108(2)b. R. THYRSIFLORUS Whe., var. **caliginosus** Sudre. Clifton, Bristol (leg. White, 8/1904, as *R. rudis* Weihe; no. 436: B.E.C.).

"Certainly not *R. rudis* Whe., since the armature and glandulosity are much too poor. Also agrees well with the figure (T. cxlviii) in Sudre (M.R.E., f. 20), only the prickles of all parts are even weaker.—Hruby, J. (1934 B: 364).

185/110(2) (=110b). R. NUTICEPS Bart. & Ridd. (1933: 217). *R. fuscus*, var. *nutans* Rogers' Handb.

185/110(3) (=110c). R. MACROSTACHYS, var. FIMBRIFOLIUS M. & Wirtg., f. HYPOLEUCOIDES Sudre. Near Burwardsley, v.-c. 58 (leg. Riddelsdell, 8/1926; B.E.C. distr. 1928, as *R. adenanthus* Boul. et Gill.).—Hruby, J. (1934 B: 359).

185/110(4) (=110d). R. OBSCURUS Kalt., f. OPULENTUS M. & L. Near Fittleworth, v.-c. 13 (leg. Riddelsdell, 7/1926, as *R. durotrigum* R. P. Murray: B.E.C. 1928 distr.).—Hruby, J. (1934 B: 365).

185/110(4)b. —— —— var. **calvifrons** Sudre. Wolford Heath, v.-c. 33 (leg. Riddelsdell, 8/8/1926, as *R. hostilis* M. & W.; B.E.C. 1928 distr.).—Hruby, J. (1934 B: 365).

185/114. R. MORGANWGENSIS Bart. & Ridd. (1933: 218). *R. horridicaulis* Rogers' Handb., non Müller. Var. *Deroniae* Bart. & Ridd. (1933: 219).

185/115(2). **R. microdontus** Muell. & Lef. The Boar's Hill, Berks, bramble known as *R. scaber* Wh. should be called *R. microdontus*. It is recorded from v.-cs. 14, 16, 19, 21-4. Hybrids occur on Boar's Hill with *R. caesius* and *R. vestitus*.—Watson (1935 A).

185/123. R. HYSTRIX, f. VELATUS Lef. Cissbury, v.-c. 13 (leg. Riddelsdell, 7/1926, as *R. hystrix*, var. *bercheriensis* Druce). "*R. bercheriensis* Druce belongs (according to Sudre) to var. *rufescens* L. & M., for which the inflorescence is too little and too weakly armed; but the plant is also not typical enough for var. *rubicundus* P.J.M., since this has more strongly haired turions and fine-toothed leaves."—Hruby, J. (1934 B: 366).

185/124. R. ADORNATUS P. J. Müller. Sandling Park, v.-c. 15 (leg. Riddelsdell, 7/1927, B.E.C.). "Typical."—Hruby, J. (1934 B: 366).

185/132. R. RILSTONEI Bart. & Ridd. (1933: 213). *R. plinthostylus* Rogers' Handb., p.p., non Genev.

185/145b. R. TERETICAULIS (P.J.M.) Sudre, var. **curtiglandulosus** Sudre, sf. UMBROSUS Sudre. Near Sapey Common, v.-c. 36 (leg. Riddelsdell, 9/1927, as *R. minutiflorus* Müller: B.E.C. 1928 distr.).—Hruby, J. (1934 B. 367).

185/151b. **R. semialterniflorus** Sudre (=*R. alterniflorus—caesius*), f. SUBLUSTRIS Lees. Intermediate between *R. alterniflorus*—inflorescence almost exactly like this, as well as the whitish felt on underside of leaves, and *R. caesius*—turions weakish, roundish to blunt-angled, mostly suffused with red (cf. *R. ambifarius* P.J.M.): leaves mostly incompletely 5-nate, outer leaflets sessile, round, broadly acuminate, base weakly rounded. Near Rollbright Stones, v.-c. 23 (leg. Riddelsdell, 3/8/1926, B.E.C. 1928 distr., as nearest *R. sublustris* Lees).—Hruby, J. (1934 A: 387).

189/7. Potentilla reptans L. Souèges (1935 B) describes the appearance of an adventive embryo, originating close to the normal embryo, apparently from a cell of the ovary tegument wall.

190. Alchemilla L. A key to the Esthonian, Latvian, and Lithuanian species is given by Zamelis (1933), many British forms being mentioned. Their distribution and a scheme of morphological relationship are also given.

193/4. Sanguisorba officinalis L. The stamens of this insect-pollinated species are compared with those of the wind-pollinated *S. minor* Scop. [*Poterium Sanguisorba* L.] by Heller (1935 B).

194. Rosa L. An account of the roses of Neumark (*i.e.*, all Brandenburg east of the River Oder), including descriptions of every infra-generic group there represented, partial running keys to many infra-specific groups, and Latin descriptions of certain new varieties and forms of *R. omissa* Déségl., *R. tomentosa* Sm., *R. agrestis* Savi, *R. elliptica* Tausch, and *R. Afzeliana* Fries, is given by Schenk (1934).

195. Pyrus L. The lenticels which form the spots or dots on the fruits have been studied by Clements, H. F. (1935) in 18 horticultural varieties of apple. They may be open or closed to the passage of gases. The number varies within limits characteristic of the variety, but is affected by the water supply in the earlier stages of development.

195 (2). Sorbus L. Cytological investigation has confirmed Hedlund's views on the relative age of certain European species, those which he regarded as more primitive being found to be diploids (n = 17), while species which in his view were derivative are now shown to be polyploids.—Liljefors (1934).

The Irish distribution of the segregates is in striking contrast to their distribution in Britain. *S. Aria* is only known round Galway. *S. porrigens* is the prevailing form, having been recorded from 16 v.-cs. from Kerry and Wexford in the South to Dublin and Sligo.

S. rupicola is widely but sparingly spread from Killarney to Londonderry, the very rare *S. anglica* has been found at Killarney only, and *S. latifolia* is probably native in the south-eastern counties.—Praeger (1935).

195/7(2). S. Leyana Wilmott (1934: 78). Breconshire, near Dan-y-graig. Distributed by A. Ley as *S. scandica* and localised "Cefn Coed."

195/14. S. latifolia Lam. British plants are not the same as Lamarck's type from the Forest of Fontainbleau. Three forms are described as new by Wilmott (1934), and the "var. *decipiens* Bechst." disappears from the list.

195/14(2). S. bristoliensis Wilmott (1934: 76). The *S. latifolia* and var. *decipiens* of the Avon Gorge; very uniform.

195/14(3). S. SUBCUNEATA Wilmott (1934: 76). The *S. latifolia* and var. *decipiens*, *intermedia*, *rotundifolia* and *scandica* of near Minehead (Greenaleigh); again a uniform plant which has received very varied names.

195/14(4). S. VAGENSIS Wilmott (1934: 78). *S. latifolia* of the Wye Valley: Symonds Yat, etc. (at least in part, as several slightly different forms occur).

199. SAXIFRAGA L. Chromosome numbers:—*S. nivalis*, n = 14; *S. stellaris* (Norway), n = 14; *S. Geum*, n = 14; *S. umbrosa*, n = 14; *S. umbrosa* × *Geum* (cultivated strain which "looked rather intermediate"), n = 14 generally, but some pollen mother cells showed a few univalent chromosomes; *S. tridactylites* (wild from Copenhagen), n = 11; *S. granulata* (Denmark), n = 46-57/2 and 60/2, and discussion of previous examinations indicates general variability—a "structural hybrid" (p. 37): the variation is not due to crossing in Denmark, where the only other native species are *S. tridactylites* and *S. hirculus*; *S. cernua* (Norway), n = c. 33; *S. hypnoides*, n = c. 44/2 and c. 58/2; [*S. caespitosa* (cultivated varieties), n = 56/2, 60/2, 63/2, 65/2]; *S. aizoides* (Norway), n = 13; *S. oppositifolia* (Norway), 2n = 26.—Skovsted (1934).

199/13. S. DECIPIENS Ehrh. Map of distribution in Moravia by Suza (1935: 480).

203. CHRYSOSPLENIUM L. Chromosome numbers known, n = 21, 24; *C. alternifolium* L., n = 24.—Skovsted (1934).

211/1(2). S. SPURIUM M.B. Chromosomes, 2n = 28 (Baldwin, 1935: 561).

211/3. SEDUM REFLEXUM L. Chromosomes, 2n = 34 or 68 (Baldwin, 1935: 561).

211/7. S. ALBUM L. Chromosomes, 2n = 64 (Baldwin, 1935: 561).

220/7(2). **Epilobium adenocaulon** Hausskn. This is an American species which has been noticed abundantly in S.W. Surrey for several years. It is distinguished by its upright growth much branched above, reddish stems, numerous very small flowers, patent pods, glandular clothing, short entire stigma, and seeds with a small pellucid beak protruding from the testa. The plant is found in woods, streamsides, gardens, and waste places, and has been recorded from v.-cs. 12, 13, 16, 17. The following hybrids with native species are recorded:—×*E. montanum*, in Surrey; ×*E. obscurum*, in Surrey; ×*E. palustre*, in N. Hants; ×*E. parviflorum*, in Surrey. This species has been known in Sweden for upwards of 30 years. Its taxonomic position is uncertain and it may be synonymous with, or a variety of, *E. glandulosum* Lehman. It was possibly introduced to Britain during the Great War, when there was a large Canadian camp at Witley, Surrey. The earliest [then known] British gathering seen was made by J. Fraser at Woking, Surrey, in June 1921.—Ash and Sandwith (1935).

Three specimens of this species in Herb. Druce antedate the previous earliest British record: Cropstone Reservoir, Leicester, v.-e. 55, August 1894, T. A. Preston; Malvern Link, Worcester, v.-e. 37, S. H. Bickham and R. F. Towndrow, July 1905; Woodchester, W. Gloster, v.-c. 34, H. J. Riddelsdell, July 1920. All the above were named by G. M. Ash. Also recorded from Colman's Moor, Berks, v.-e. 22, June 1928, G. C. Druce; near Henley, Oxon, v.-c. 23, 1935, Ash.—Chapple (1935).

223. Oenothera L. A key is given by Munz, P. A. (1935) (also full descriptions) of the subgenus *Raimannia*, which includes *O. odorata* Jacq., and *O. strieta* Ledeb. to which belongs most of the material named *O. odorata* [including the plant of our sandhills]. *O. odorata* has cauline leaves undulate or crisped and is often glaucous, petals 15-35 mm. long. *O. stricta* has leaves generally not crisped (if crisped the petals are shorter [" 12-30 mm."] and is not glaucous). *O. argentina* Lév. et Thell., which has been recorded from docks in Britain, is reduced to *O. indecora* Camb.—Munz (1935).

Umbelliferae. Chromosomes: number varies from 6-48 haploid (tables given) and 8 (not 11) is considered as the most probable basic number.—Wanscher (1934).

237/1. Hydrocotyle vulgaris L. Chromosomes, n = 48.—Wanscher (1934: 63).

276/3. Pastinaca sativa L. The anatomy of the vegetative organs is described by Warning (1934). The floral axis is initiated during the first year and develops rapidly during the second.

291. Lonicera L. Feng (1934) notes the presence of a typical centrosome in the resting nucleus of pollen cells in *L. Xylosteum* L. (p. 38, pl. vi): somatic divisions are described (p. 55), and spiral spermatozoids figured (pl. vii).

296. Galium L. Chromosomes: *G. Mollugo*, L., n = 11; var. *latifolium*, a tetraploid, n = 22. The latter crossed with tetraploid *G. verum* gave fertile hybrid, n = 22. *G. erectum* Huds., n = 22 (i.e. tetraploid). *G. verum* L., ssp. *verum* (L.) Hayek and ssp. *litorale* (Bréb.)—both n = 22 (i.e. tetraploid); *G. uliginosum* L., n = 22; *G. palustre* L., n = 33; *G. boreale* L., n = 33 (i.e. hexaploid).—Homeyer (1935).

296/2×9. G. Mollugo L., var. latifolium × verum. Description and account of geneties by Homeyer (1935: 253). Selfing of wild plant showed considerable variation in leaf form—the F_1 clearly segregates and " a special specific name should be avoided."

298. Asperula L. Chromosomes: *A. cynanchica*, n = 22 (but 11 in a " f. *montana* "); *A. odorata*, n = 22.—Homeyer (1935: 259).

308. [Scabiosa L. Sect.] Knautia. Szabo (1934) gives the result of work on material from France and Spain examined since the author's monograph of 1911. The classification and distribution

of the species are discussed and an enumeration is given, including several new species, varieties and forms. Under *K. arvensis* one new variety is described.

Cytological study by Jaeger (1934 B) shows that in *K. arvensis* n = 8 as usual in Dipsaceae.

308/5. K. ARVENSIS (L.) Coult. Pollen grain and its nuclei described in detail by Jaeger, P. (1934 A).

90% of the pollen grains showed degeneration of the three nuclei, and were probably sterile, although grains without nuclei can produce a pollen tube of normal appearance.—Jaeger (1935).

318/20. ASTER LINOSYRIS (L.) Bernh. In open sunny places protected from wind this species behaves as a compass-plant (gnomon-plant), all its leaves turning to the South in the direction of the midday sun.—Huber (1935).

339. AMBROSIA L. An account of the species occurring in Italy. Besides the indigenous *A. maritima*, four species, *A. artemisiifolia*, *A. coronopifolia*, *A. tennifolia*, *A. trifida*, and its var. *integrifolia*, have been introduced from America.—Vignolo-Lutati (1935).

353/1d. BIDENS CERNUA L., sub-var. **rugosa** Coss. & Germ., a form with the stem and branches clothed with numerous prominent patent yellow bristles. Breamore, S. Hants, and Heckfield, Berks.—Lousley (1935).

383/3×5. SENECIO AQUATICUS Hill ×JACOBAEA L. Occurs very commonly in Ireland with fertile offspring and many intermediates; this hybrid may have been overlooked in Britain.—Praeger (1935).

383/5. S. JACOBAEA L. A study of the means of controlling this pest is made by Cameron (1935).

383/31. S. CINERARIA DC. An extract from this species having proved effective in cases of cataract, the distribution of the species is detailed by Turrill (1935 A): a Mediterranean species, chiefly on maritime rocks.

383/33. S. SPATHULAEFOLIUS Gmel. The Bulgarian plants which have been thus named are *S. procerus*, var. *neglectus*.—Stojanoff (1934).

395/3. CARDUUS PYCNOCEPHALUS L. (restr.). Comparison is made between *C. tenuiflorus* Curt. and the restricted *C. pycnocephalus* L., which were found growing together on Plymouth Hoe. The latter is occasionally found as an alien at seaports and is probably of alien origin, although it has been known at Plymouth since 1868. —Lousley (1935).

396. CIRSIUM Mill. Chromosome numbers of thirty non-British species found to be 17 (16 species), 34 (11 species), and 51 (3 species in one series).—Aishima (1934).

396/8. C. ARVENSE (L.) Scop. A discussion of the means and causes of the spread of this species in the state of Iowa.—Hayden (1934).

416/1. Crepis mollis Asehers. A sheet of this species in Herb. B. Reynolds, named *C. paludosa*, is labelled as from Co. Down, but Praeger was unable to find *C. mollis* in the locality in 1935 and there has probably been mixture of speeimens.—Pugsley (1935 C).

416/3. C. biennis L. The identification of a *Crepis* grown by the late Dr E. Drabble in the Isle of Wight from seed taken from a Herbarium specimen from N. Yorks in 1932 with *C. sporinoides* was incorrect. The plant was *C. biennis*. A synoptic table of the characters of these two species and *C. nicaeensis* is given by Babcock (1935).

435. Campanula L. The taxonomy and distribution of many varieties and forms are discussed by Hruby, J. (1934 C). The species dealt with include *Campanula rotundifolia*, *C. patula*, *C. rapunculoides*, and *C. glomerata*.

Ericaceae. Pollen grains of the following species are described and mostly (indicated by *) illustrated by Overbeck, F. (1934):—*Erica cinerea* and **E. tetralix*, **Calluna vulgaris*, *Sedum palustre*, **Loiseleuria procumbens*, *Phyllodoce coerulea*, **Andromeda polifolia*, **Arctostaphylos uva-ursi* and *A. alpina*, **Vaccinium vitis-idaca*, **V. myrtillus*, **V. uliginosum*, **Pirola secunda*, *P. minor*, *P. media*, **P. rotundifolia*, and **Moneses uniflora*.

Chromosomes: Wanscher (1934)—*Erica cinerea*, n = 12, shows secondary associations, probable maximum 3-3-3-3; *Phyllodoce coerulea*, n = 12 (Hagerup reports 6 but his drawings and slides show 12), shows at least five groups of two or three; these groupings indicated 4 and not 6 as the probable basic number of the *Bicornes*.

441. Arctostaphylos Adans. A key and descriptions of the 53 known species. Our British *A. Uva-ursi* is included, but *A. alpina* is not mentioned since it is now almost universally regarded as constituting the independent genus *Arctous*.—Eastwood (1934 B).

441/2. A. alpinus (L.) Spreng. long known to British botanists as *Arctostaphylos alpina* L., is keyed off from *Arctostaphylos* by the deciduous leaves into the genus *Arctous*.—Eastwood (1934 A).

446/4. An account of the very limited range in Cornwall of *Erica ciliaris* L. and its hybrid with *E. Tetralix*.—Vigurs and Rilstone (1935).

453. Pyrola L. A key to the four Belgian species is given by Hauman (1934).

456/1. Monotropa hypopitys L. The relation of this species to its mycorrhiza throughout its life-history is described by Francke (1934).

467. Anagallis L. *A. arvensis* L. has leaves generally ovate, but plants occur with lower leaves ovate and upper lanceolate. The colour of the corolla is typically scarlet but plants are also found with salmon, flesh (var. *carnea*), and blue corollas. On selfing all

breed true through several generations. All the colours cross readily together and the F_1 and subsequent families are fully fertile. *A. foemina* Mill. has lower leaves ovate, upper lanceolate. The corolla is blue, but of a shade different from *A. arvensis*: by Ridgway's Colour Standard the shade is greyish violaceous blue in *A. foemina*, deep dull bluish violet in *A. arvensis*. The differences between the "species" are in the corolla only. Salmon-coloured *arvensis* gives a fertile F_1 with *foemina* and a highly segregating F_2. *A. foemina* should only be regarded as a variety of *A. arvensis*.—Marsden-Jones (1935 A).

471. Fraxinus L. A study of the bud-scales, leaf-scars, twigs, etc., of certain species (including *F. excelsior*) and a key for identifying them in the winter condition, is followed by useful descriptions and figures.—Whelden (1934).

478/1. Centaurium umbellatum Gilib. The development and differentiation of the growing stem tissues are described in detail with figures.—Halmai (1935).

480/7. Gentiana uliginosa Willd. is regarded as specifically distinct from *G. Amarella* L., following Murbeck's view. An interesting account of their morphology, taxonomy, ecology, biology and local distribution in northern Neumark, Brandenburg, is given by Libbert (1935).

505/1. Mertensia maritima (L.) Gray. Distribution detailed by Tolmatchew (1934)—Arctic Europe and North America, but not Siberia: rather like that of *Hollianthus peploides*, but much more local and extending less far south on the coasts of the Atlantic and the Pacific coast of America; only on the Pacific coast of Asia, where it is quite common, does it reach as far south as *H. peploides*.

517/7. Solanum rostratum Dun. Recorded from France (Vendée) by Dop, P., and Gaussen, H. (1934), and fully described.

522. Datura L. Following treatment of pollen by radium, normal plants, with chromosomes 2n and 3n, have been obtained in various ways.—Satina and Blakeslee (1935).

527. Verbascum L. The development of the embryo in *V. Blattaria* is of exactly the same type as that of *Veronica arvensis* and *Mentha viridis*.—Souèges (1935 A).

541/1. Digitalis purpurea L. Characters of the epidermis and hairs of the leaves are described and figured in detail from many parts of Europe (none from the British Isles), and compared with other species of the genus by Oehm (1935). The hairs are variable.

543. Veronica L. A new variety of *spicata* L., var. *austrobulgarica*, is described by Degen (1934), with densely hairy stems and leaves, and ciliate capsules and calyces.

545. Euphrasia L. The occurrence of *E. tenuis* in the Tatra mountains on the borders of Czechoslovakia and Poland is recorded by

Györffy (1934 B), and its short and early flowering period described. It is considered a distinct species.

546/4. Bartsia viscosa L. A Belgian record for this species is described by Goffart and Sternon (1935).

549/3. Melampyrum pratense L. A paper by C. E. Britton deals with the British distribution of the varieties and is complementary to the paper by the same author in Rep. B.E.C. for 1934. The main division into two subspecies, *eu-pratense* Beauv. and *vulgatum* Beauv., is abandoned. Var. *foliatum* Neum. appears in Br. Pl. List, ed. ii. "Sussex, Tyrone." According to the present author the Sussex plants so named are in reality an early summer condition of the var. *lanceolatum*, and the Clogher Valley, Tyrone, plants are the var. *typicum* Beck. Var. *foliatum* therefore disappears from the British List. The varieties admitted and the vice-counties from which they are recorded in this paper are:— Var. *typicum* Beck.; 92, H36. Var. *alpestre* Beauv. (as the sub-var. *scotianum* Beauv.); 89, 110. Var. *ericetorum* D. Oliver; 5, 14, 17, 18, 58, 86, 88, 92, 100. Var. *commutatum* (Tausch) Beck., including sub-var. *concolor* (Schönheit) Beauv.; 16, 34, 35, 69. Var. *vulgatum* (Pers.) Beck., sub-var. *laurifolium* Beauv.; 7, 9, 10, 11, 15, 16, 22, 23, 37. (*Note*.—V.-c. 12 is given in the paper but the locality, Bishopstoke, is in S. Hants). Var. *ovatum* Spenn.; 2, 15, 16, 17, 22, 23, 33, 34. Var. *lanceolatum* Spenn. ("no doubt the most common form of the species"); 14, 16, 17.—Britton (1935).

Stomata: see Smith (1935: 456).

551/1. Lathraea squamaria L. The glandular tissue of the rhizome scales shows similarities with bladders of *Utricularia*; there is a potential difference of 20 MV. between the epidermis and glandular layer, and the excretion is similarly alkaline.—Nold (1934: 440, 446).

552/1. Utricularia vulgaris L. The function of the bladders has been thoroughly investigated by Nold (1934). The winding up of the mechanism is not due to growth but to the expulsion of water, which can be observed both in paraffin oil and in a damp chamber. Calcium and potassium salts are expelled with the water; excretion from the bladders is rhythmic (and alkaline). A suitable electrometer shows a difference in potential of 40-50 MV. between the four partite hairs on the inner (positive) and outer (negative) sides of a normal bladder. The normal functioning of bladders in a "phosphate-buffer" [i.e., a solution which maintains a constant pH. value] is possible only up to pH. value 7, and the pH. value in natural habitats of the plant is, according to measurements, always less than 7.

558. Mentha L. The nature and origin of the polymorphy in this genus is discussed by Trautmann (1934). The following abstract

is by Mr A. L. Still (whose rough translation of the whole paper is in the Nat. Hist. Mus. library).

The author has previously expressed his opinion that the great majority of the Mints are hybrids, not only between the accepted species, but between distinct types which occur within the species.

This opinion has been challenged, so the author brings further arguments forward to support it, with special reference to the forms of *M. longifolia* Huds., which are such an important feature of the Mint flora of Hungary and the Balkans.

He recognises a continuous series of forms, beginning with the riparian, large-leaved, green and sparingly hairy, ramose *M. cuspidata* (Op.) Trtm. and ending in the small-leaved, simple, woolly *M. retinervis* (Borb.) Trtm. from dry situations, with a vast number of intermediates. His opponent maintains that these forms have arisen from *M. cuspidata* (Op.) by a process of mutation consequent on the gradual change from a wet to a dry habitat. This view the author considers to have been arrived at by comparison of simple forms from widely separated localities, so that no connection can be traced between them. From his study of complete collections from restricted areas he claims that the differences cannot be related to ecological conditions, but should be attributed to hybridity. Among the hundreds of forms of *M. longifolia* Huds. (sensu lato) occurring in Hungary the author recognises, so far as his researches have progressed, 30 or 40 types, from which he contends the remaining forms have arisen by crossing. He does not overlook the problem of "mosaic-hybrids." The actual types occur rarely in comparison with the abundance of the hybrids.

In the author's opinion, the difficulties surrounding the determination of Mints can only be solved by making and studying complete collections of Mints from rather small but rich areas. In this way he thinks that the types can be decided upon and their influence in the hybrid forms detected. Once the types are recognised, the comparison of gatherings from widely separated areas will take on a phyto-geographical importance.

In the author's opinion the older monographers failed to grasp this aspect of the problem, because their material was drawn in small quantities from too wide an area, so that the connecting links between his so-called types were missing.

[By way of comment, it may be said that his idea of the importance of exhaustive collection from small areas is undoubtedly sound. With regard to the possibility of recognising "types" which would command general acceptance, one cannot entirely share the optimism expressed by the author.—A.L.S.]

Fourteen new mints are described with Latin diagnoses, 10 new subspecies and 3 new varieties of *M. longifolia*, and one new subspecies of *M. aquatica*.—Trautmann (1935).

558/13×1. M. ARVENSIS L. × ROTUNDIFOLIA (L.) Huds., of spontaneous, not cultivated, origin, found at Salcombe, S. Devon, v.-c. 3. Two forms of this hybrid were named by F. Schultz *M. Wohlwerthiana* and *M. Muelleriana*. Two other forms of this hybrid are *M. stachyoides* Host and *M. arvensis*, var. *micrantha* F. Schultz. The Salcombe mint is described as **M. Muelleriana** F. Schultz, var. **serratifolia** Pugsley.—Pugsley (1935 A).

566/1. SALVIA PRATENSIS L. See Hruby, K., 1934. Originally a south european pontic species, it is now spread over the whole Mediterranean. Many varieties are named and described. Germination about 30 hours after wetting. Chromosomes n = 9; 2n = 18, two pairs larger and two smaller, one sometimes with satellites.

586/1. TEUCRIUM SCORODONIA L. The associations in which the species grows in Valois are described by Jovet (1934).

587/4. AJUGA CHAMAEPITYS (L.) Schreb. Distribution map of species and account of geographical variation by Turrill (1934), the peculiarities of the British form being given in detail (p. 219), with figures of nutlets and flowers (p. 227).

588. PLANTAGO L. Among a number of species tested with regard to the influence of light on germination, *P. lanceolata* and *P. media* are "indifferent," i.e., show the same germination results in light as in darkness, while *P. major* and, to a less marked degree, *P. Coronopus* and *P. maritima*, definitely prefer light. A very few (non-British) species, e.g., *P. arborescens* and *P. Cynops*, apparently germinate best in darkness.—Witte (1935).

588/5. P. MARITIMA L. and its allies. Var. *integralis* (Gaudin) Pilger is not known to be British. Sub-var. *Hudsoniana* (Dr.) Pilger = *P. maritima* L., γ *serpentina* Brand, f. *ciliata* Williams, and δ *alpina* Williams = *P. Hudsoniana* Druce = *P. montana* Huds. sec. Druce. Has been recorded from Caernarvon, Durham, Cumberland, Perth, Skye and Unst. Sub-var. *parvula* Pilger = *P. maritima* L., δ *alpina* Williams, f. *pumila* Kjellman = *P. maritima* L., f. *angustissima* Grevillius. Recorded from Unst, Sutherland and Shetland. Var. *minor* Hook. = *P. maritima*, δ *alpina* Williams, f. *hirsuta* Williams = *P. maritima* L., var. *lanata* Edmondston ex Williams = *P. Edmondstonii* Druce. A small form with thick rhizome, leaves linear-lanceolate to lanceolate, 1.5-3 (-4) cm. long, 2-3 (-4) mm. broad, with greyish-white basal wool; peduncle 4-10 cm. Spikes small, 0.5-3 cm.; Orkney and Shetland.—Pilger (1935).

588/8. P. LANCEOLATA L. The stamens of this wind-pollinated species are compared in detail with those of the insect-pollinated *P. media* L. by Heller (1935 B).

588/8h. —— —— var. ANTHOVIRIDIS Wats. This var. is widely though sparingly distributed and may be recognised by the more erect stamens on shorter filaments with greenish-yellow anthers.

There is also a difference in the pollen: in one form the pollen grains are about half the width of normal grains and lacking the granular contents, in another form 10% of the pollen grains are normal, the remainder as described above.—Rilstone (1935).

600. CHENOPODIUM L. Chromosome numbers given by Kjellmark, 1934 (and those given by Winge in 1917) are:—*C. album*, 27 (four forms: Winge says 9); *C. hybridum*, Winge says 9; *C. murale* ("9," Winge); *C. rubrum*, 18; *C. Vulvaria* ("9." Winge); *C. bonus-Henricus* ("18," Winge). *C. hybridum* 2n = 36; *C. album*, 2n = 36.—Cooper (1935).

606. ATRIPLEX L. A classification of this genus on a basis of the leaf structure is attempted by Moser (1934: 385), but the British species remain in the same groups. Chromosome numbers given by Kjellmark (1934: 139):—*A. patula* 9, *A. hortensis* 9. *A. hastatu* L., n = 18, reported by Cooper (1935); Winge found *A. hastata*, 2n = 18, and *A. patula*, 2n = 36.

611. SALICORNIA L. Effect of tide on populations of *S. europaea* quantitatively described by Wiehe (1935).

613/1. SALSOLA KALI L. Chromosomes, n = 18.—Cooper (1935).

618/4. RUMEX ELONGATUS Guss. from Thames-side has remained constant in cultivation: similar plants from Medway, W. Kent.—Lousley (1935).

618/29. R. OBOVATUS Dans., var. CORDATUS C. Blom, is distinguished as new on account of its distinctly cordate lower leaves. It occurred as a casual near Götcborg, Sweden.—Blom (1934 B).

621/1. ASARUM EUROPAEUM L. Observations on the distribution of the seeds over short distances by snails, which eat the "nectar-cells" of the lower part of the perianth and also the seed-arils, the seeds themselves resisting digestion. Distribution of seeds through the agency of ants (myrmecochory) is of rare occurrence. —Wallner (1935).

625. HIPPOPHAE L. The species of this genus are sunk into *Elaeagnus* by Nelson (1935): a brief key and synopsis are added. *Elaeagnus rhamnoides* (L.) A. Nelson, n.-comb.

628. EUPHORBIA L. A discussion of species-relationship as shown by the electrophoresis of latex. British species examined were:—*E. Lathyris*, *E. pilosa*, *E. platyphyllos*, *E. virgata*, *E. Esula* and *E. Cyparissias*. The reactions of latex from *E. virgata*, *E. Esula* and *E. Cyparissias* were found to be very similar.—Moyer (1934).

631/1. BUXUS SEMPERVIRENS L. A full account of the *Buxus* society in the Enntal (Upper Austria), with discussion of its origin and age, is given by Rohrhofer (1934): the species is protected there.

632/2. MERCURIALIS ANNUA L. The cytology of the intersexual flowers and of the abscission zone is studied by Yampolsky (1934 A and B).

633. Ulmus L. The British species are described and well illustrated by Bancroft (1934), Elwes and Henry's nomenclature being used. The species described are:—I. Goodyer or Small-leaved Elm (*U. minor*, p. 122, fig. 52, and cf. p. 180); II. *U. montana* and *U. nitens* (p. 139, figs. 57 and 58); III. The Cornish Elm (*U. stricta*, p. 208, fig. 86), with a note on the Wheatley Elm; IV and V. Elms generally accepted as hybrids: Huntingdon Elm (p. 244, fig. 98), Dutch Elm (p. 298, fig. 120); VI. The Common or English Elm (p. 334, fig. 134); VII. Conclusions and Bibliography (p. 372). "The number of . . . true species is limited, but that . . . of varieties and of hybrid and intermediate forms . . . is indefinite and incalculable."

633/4. U. minor Mill. sec. Henry (Goodyer's Elm). The growth of a seedling established in a crevice of the masonry of a Cambridge wall is described by Dallimore (1934).

Amentiferae (and Salicaceae). The development of the male catkins is detailed by Heller (1935 A). They begin to form in spring or summer of the year before they flower. Some (*Alnus*, *Betula*) are covered by a coating of resin during the winter, others (*Corylus*) by a mat of hairs, others by woody scales and woody hairs, but there is no lignification when the catkins are completely covered in winter by bud scales (e.g., *Fagus*, *Quercus*, *Populus*). Many other anatomical and developmental details are given.

For detailed study of the stamens of *Alnus glutinosa*, *Betula pendula*, *Carpinus Betulus* L., *Corylus Avellana* L., *Fagus silvatica* L., and *Quercus pedunculata* L., see Heller (1935 B).

644/1. Carpinus Betulus L. The northern and western distributional limits of the Hornbeam, illustrated by a map, are compared with those of the Beech by Erdtman (1934).

The reactions of the tissues to the eggs and larvae of *Perrisia carpini* and the migration of the larvae is described by Christmann (1934).

645/1. Corylus Avellana L. An account of the development of the catkin and the pollen, discussing their reactions to the cold of winter, and the difference between morphological and physiological maturity.—Foa (1935).

646. Quercus L. It is certain that *Q. Robur* L., Sp. Pl., 996 (1753) is the pedunculate oak, cited by most Continental authors as *Q. pedunculata* Ehrh., but there is confusion as to the correct name for the sessile oak, variously cited as *Q. Robur* Miller (1768), *Q. sessilis* Ehrh. (1789), and *Q. sessiliflora* Salisbury (1796). Though there is no doubt at all what species Ehrhart intended, his name was published without description and most modern authors prefer *Q. sessiliflora* Salisb. Mattuschka (Fl. Siles., ii, 375, 1777) gave a detailed description in German of a *Q. petraea*, but he cited it as a variety of *Q. Robur* L. and it is therefore inadmissible as a specific epithet. But the name appears again

in Lieblein's Fl. Fuldensis, 403, 1784, where it is cited as "*Quercus petraea* Linn." with a description in German. The name *Q. petraea* Lieblein is proposed for the sessile oak. For the third species of oak native to Germany the name *Q. pubescens* Willd. is preferred to *Q. lanuginosa* Lam., which is held to be synonymous with *Q. Cerris* L.—Schwarz (1935).

649. Fagus L. A study of the leaf characters used for distinguishing *F. sylvatica*, *F. orientalis*, and a new species or subspecies *F. moesiaca*, which is said to lie between the two both in taxonomic characters and in area of distribution.—Czeczott (1934).

650. Salix L. Ecological study of the Willows of the western part of the Isle of Wight by Buxton (1934).

651. Populus L. The origin and development of sucker buds on the roots into sucker shoots is described anatomically by Brown (1935).

P. nigra, *P. trichocarpa*, and *P. tacamahacca* are species growing in Britain which are among the parents of new hybrids recently artificially obtained in the nursery of the Oxford Paper Company at Frye, Maine, U.S.A. The new hybrids are being propagated by cuttings and a special horticultural name has been given to each clone.—Schreiner and Stout (1934).

651/2. P. tremula L. The development of the male catkins is detailed by Heller (1935 A); see *Amentiferae*. For details of the stamens see Heller (1935 B).

652. Empetrum L. The differences in the distributions of *E. nigrum* and *E. hermaphroditicum* in Sweden are detailed by Arwidsson (1935). Chromosomes: *E. nigrum*, n = 13, maximum association 3-3-3-4. *E. hermaphroditicum*, n = 26, also shows associations pointing to a lower basic number than 13.—Wanscher (1934).

652/1. E. nigrum L. Pollen described and figured by Overbeck, F. (1934).

652/2. E. hermaphroditicum (Lge.) Hagerup. There is an earlier but invalid name for this species. In Herb. Hooker at Kew there is a specimen labelled "Highlands of Scotland, 1807." Attached to the sheet is a slip of paper with an enlarged drawing of the flowers by Sir W. Hooker and a note in his hand, "Hermaphrodite! *E. scoticum*." The name is invalid under Article 37 of the Rules of Nomenclature.—Pugsley (1935 D).

655/1. Stratiotes aloides L. Experiments are described in detail by Vegis (1933) showing the effect on turion-production of various periods of immersion in water between 35° and 100° C.

669. Orchis L. *O. latifolia* of Linnaeus is the plant which has been generally known in recent times as "*O. incarnata* L.": the plant named by Linnaeus *O. incarnata* was a flesh-coloured form of *O. sambucina* L. These are the two principal theses of Pugsley (1935 E), referred to at greater length elsewhere in this Report. The species covered by this paper are arranged as follows:—

O. latifolia L., sensu stricto = *O. incarnata* auct. non Linn. Var. **Gemmana** Pugsley, a tall, leafy form with long bracts; var. *ochroleuca* (Boll.) Pugsley; var. *pulchella* (Druce) Pugsley; var. **coccinea** Pugsley = f. *atrirubra* Godfery; var. **cambrica** Pugsley.

O. cruenta Mull. Not British, now first recorded for Switzerland.

O. praetermissa Druce.

O. pardalina Pugsley = *O. latifolia* auct. non Linn., probably = *O. latifolia* L., var. *junialis* Vermeulen.

O. purpurella Steph. Var. *pulchella* (Druce) Pugsley, transferred from *O. praetermissa* Druce.

O. majalis Reichb. Not British. Var. *pinguis* (A. & G.) Pugsley; not British. Var. **occidentalis** Pugsley, described from Irish plants.

O. alpestris Pugsley = *O. latifolius* race or subspecies *impudicus* A. & G. Not British.

O. sambucina L. with var. *incarnata* Lam. Not British.

669/18. Himantoglossum hircinum Koch. The behaviour of this species in cultivation at Stevenage (Herts) since 1931 is described by Wooster (1935).

676. Iris L. The floral nectaries (and their anatomy of) many species are described in detail and their systematic importance discussed by Daumann (1935). *I. foetidissima*, p. 565 (figs.); (*I. spuria*, p. 575); *I. pseudacorus*, p. 576 (figs.).

680/1. Sisyrinchium angustifolium Mill. Is recorded, as new, for the High Tatra by Györffy (1934 A). It has been found in Hungary (Com. Marmaros, 1917) and Croatia (Com. Zagreb, 1915) and Hayek recorded it for Galicia in 1916; it has been recorded also as an escape in Bohemia, Moravia, Lower Austria and the Tyrol. Possibly introduced on boots of foresters, or by birds (Degen in lit.).

684. Narcissus L. A study of the number and morphology of the chromosomes in certain species, including several of those included in British lists.—Fernandes (1934).

689/1. Ruscus aculeatus L. The development of the assimilating organs is described and figured by Wenck (1935: 13).

702/6. Allium ursinum L. This species has been specially studied by Schnucker and Drude (1934) from the point of view of laws of plant distribution. Vegetative increase (diagram, p. 550) is slight, seed production prolific, yet the plant is not present everywhere in the area wherever the author would expect it, but is restricted to the flat high lying plains, and almost exclusively to "Muschelkalk," while even there it may be absent. Dispersal to a considerable distance appears to be important, and the ecological (especially edaphic) peculiarities of the area need investigation. Such prolific seed production ("almost confined to annuals and biennials") is [thought by the author to be, but cf. *Endymion*,

Juncus, *Orchis*, etc., A.J.W.] unusual in a perennial, in which reproduction by seed " probably plays a much lesser part than is usually thought." [It is probably slight in closed associations.—A.J.W.].

706. SCILLA L. *Scilla* L. emend. should be added to the list of *nomina conservanda*, the type-species having been transferred to *Urginea*. —Chouard (1934).

706/3. S. NON-SCRIPTA (L.) H. & L. There are " strong taxonomic reasons for conserving and extending " the genus *Endymion*.—Chouard (1934).

The normal flower has one bracteole which may be placed on either side of the bract. Plants were found near Paignton, S. Devon, bearing in very small numbers flowers having no bracteoles and flowers having two bracteoles. Plants were also found bearing supernumerary bracts. Under unusual conditions vegetative features may occur in the region of the flowers, resulting in the formation of additional foliar organs on the spiral of growth and a disturbance in that part of the flower where the spiral impinges.—Burkill (1935).

706/3d. SCILLA (vel ENDYMION) NON-SCRIPTA, var. **longipedicellata** (Senay) comb. nov. (A. J. Wilmott). Senay (1935) describes Kent specimens in the ecological herbarium at Kew (as *E. nutans* var.), which have excessive elongation of most of the bracts, and elongated pedicels towards the base of the inflorescence.

716/1. PARIS QUADRIFOLIA L. Cytology.—The asiatic var. *obovata* has n = 5, the five chromosomes being easily distinguishable from each other: diploid and triploid forms found.—Haga (1934: 247).

724/1. ACORUS CALAMUS L. Further evidence of the fruiting of this species in North America is given by Buell (1935 A), who finds no reason for doubting its indigeneity. The species is sterile in Europe, but fruits freely in Minnesota where it is probably native. The seed and seedling are described and figured by Buell (1935 B).

727. LEMNA L. Interaction of external factors on the rate of growth is analysed by Hicks (1934) and Ashby and Oxley (1935).

Whether flowering in this genus is as rare as supposed, and possible conditions affecting flowering, are discussed by Joukovsky (1935), who observed mass flowering of *L. minor* and *L. trisulca* near Jaroslavl, and describes and figures them. Numerous specimens of morphological interest were found, in all of which a peculiar swelling occurred between the root and the lamina bearing minute scales, which, increasing in size, topped itself with " a flat plate of a normal stem." [There is no figure, but the author considers this the first evidence of a definite stem with metamorphosed leaves (scales) found in the genus].

727/1. L. MINOR L. This species flowered in Cheshire in August 1934. Flowering fronds were plentiful in a shallow ditch where the water was fully exposed to the sun. Pollination results from the

juxtaposition of free-floating flowering fronds rather than from crawling insects or wind.—Green, Mörch and Travis (1935).

ALISMATACEAE. The ribbon-leaves of *Sagittaria*, *Alisma*, *Elisma*, and *Damasonium*, although externally uniform, show anatomically a differentiation into petiole and lamina.—Meyer (1935).

736/1. SCHEUCHZERIA PALUSTRIS L. Embryology and endosperm development detailed (good figures) by Stenar (1935) in relation to phylogeny.

737. POTAMOGETON L. Boros (1934) discusses the Hungarian distribution of the following species: *Potamogeton coloratus*, *P. fluitans*, *P. helveticus*, var. *balatonicus*, *P. pectinatus*, and *P. filiformis*.

740/1. ZOSTERA MARINA L. This species largely disappeared from the American Atlantic coast in 1893 and 1894, returning to normal abundance after some years. Other cases of temporary local scarcity are known. At present some areas show improvement but others do not (Cottam, 1934). "Probably no period of eelgrass scarcity (in U.S.A.) can be compared in intensity, duration, and completeness with the present catastrophe."—Cottam (1935: 270; and see 1934). Further evidence is discussed; extreme cold may produce scarcity. Condition in U.S.A. is still unsatisfactory generally, but a few localised areas are fast approaching normality.

746/8. SCIRPUS PAUCIFLORUS Lightf. The Eastern American plants of this species are found to differ from the typical Scotch form, having softer caudices, narrower spikelets 4-6 mm. (not 5-8 mm.) long, averaging 5 (not 6) flowers, narrower (not equilateral) duller achene, and bristle teeth weak and irregular. They are named *Eleocharis pauciflora*, var. *Fernaldii*, by Svenson (1934: 380, Plate 321): Distribution map on p. 384.

746/9. S. PARVULUS R. & S. Map of distribution in United States by Svenson (1934: 387).

753/27. CAREX HUMILIS Leyss. Detailed map of distribution in Moravia by Suza (1935: 473).

753/29. C. ERICETORUM Poll. Map of distribution in Moravia by Suza (1935: 477).

753/41. C. ATRATA L. Leaf anatomy of series *atratae* in Japan (Japanese key, p. 547, includes *C. Buxbumii*): *C. atrata* peculiar in having no spine cells in the margin.—Akiyama (1935: 551).

753/50. C. TRINERVIS Dégl. In recording this species for the island of Sylt (W. coast Slesvig), Bornmuller (1935) gives much information concerning its distribution. It is a maritime dune plant almost exclusively of the Atlantic coast region from Portugal, France, Belgium, Holland, Frisian Is., Denmark, and sporadically along the Baltic to Finland.

753/54. C. LAGOPINA Wahl. Leaf anatomy figured by Akiyama (1934: 254); Japanese material.

753/58. C. CANESCENS L. Leaf anatomy figured by Akiyama (1934: 253); Japanese material.

753/68. C. DIVISA Huds. A thriving colony was discovered in Maryland (Chesapeake Bay) by Blake (1934: 412), the first record for America [presumably introduced, as *Teesdalia nudicaulis*—a ballast alien—was recorded from the same point].

GRAMINEAE. Several changes in classification are suggested by Prat (1934) from a study of epidermal tissues. *Nardus* becomes a new subtribe of *Chlorideae*, *Beckmannia* is transferred to *Festuceae*. The genus *Spartina* contains at least five subdivisions.

The ligule consists of (a) the free upper border of the sheath, which is usually split, and (b) a median upgrowth of the leaf epidermis. Either or both of these parts may be absent, but if (b) is absent the grass is considered eligulate. In the studies of transition structures between lemma and normal leaf (Philipson, 1934) both these parts may be evident, and (b) " may form a scale which is free from the lateral lobes, which then appear as lobes of the sheath," i.e., (a).—Philipson (1935 B).

Study of proliferating spikelets of *Dactylis glomerata* and *Deschampsia caespitosa* show that the leaves of such spikelets are equivalent to the lemmas, the lateral teeth of the latter being ligular.—Philipson (1934).

758. SPARTINA Schreb. Chevalier, A. (1934) discusses the species of this genus and doubts the hybrid origin of *S. Townsendi* Groves because it possesses characters not in either supposed parent. [But Huskins has shown that *S. alterniflora* has chromosomes 2n = 70, *S. stricta* 2n = 56, *S. Townsendi* 2n = 126, which confirms the supposition of hybrid origin.] *S. stricta* (Aiton, 1789) Roth 1806 is called *S. maritima* (Curtis, 1758) Fernald 1916 [but the latter is invalidated by *S. maritima* Walter 1788]. Three forms of *S. glabra* Muhlb. (*S. maritima* Fernald, subsp. *glabra* (Muhlb.) Yves) are differentiated, but not recorded for this side of the Atlantic. *S. Neyrautii* is treated as being luxuriant *S. alterniflora* L.

758/3. S. TOWNSENDII H. & J. Groves has been planted in six Irish counties and is making good progress.—Praeger (1935).

The extension of the range of this species at the mouth of the Seine is detailed (with maps) by Senay (1934). Its characters are discussed, also its origin and method of dissemination (by shipping).

Details of the planting out of this species in Denmark (1931 and 1932) are given by Jorgensen (1934, with map and photographs). It appears to be doing well.

The germination has been investigated by Nelson and Munro (1934) with a view to discovering the best methods of storage for preserving the viability of the seed for its practical use in coastal reclamation work. Dry storage appears to be preferable.

777. PHLEUM L. A full bibliography of taxonomic and agrieultural work on this genus is given by Hall, M. (1935).

780. AGROSTIS L. There are four kinds of abnormality of the spikelet.

1. "*A. sylvatica* Huds." is a state of *A. canina* L. due to infection by a nematode worm, *Anguillina agrostis*. *A. stolonifera* and *A. tenuis* are also attacked and the effeets of infection are enlargement of the glumes, lengthening of the lemma with increase in the number of nerves, and development of the ovary into a spindle-shaped purple gall. The result is a quasi-vivaparous state not to be confused with

2. True "vivipary" or proliferation. This occurred in two culms of a plant of *A. stolonifera*, var. *maritima*, transplanted from Tynemouth to Kew.

3. Infeetion by a fungus, *Tilletia decipiens*. This, when *A. tenuis* is attacked, results in "*A. pumila* L." of low habit and with numerous ereet culms. There are also, however, dwarf forms of *A. tenuis* of natural origin. The fungus is also found on *A. stolonifera* and *A. canina*.

4. Two-flowered spikelets. This is of extreme rarity in *Agrostis* and has been noted in *A. setacea*, *A. tenuis* and a speeimen in Herb. Mus. Brit., whieh may be *A. canina* × *tenuis*.—Philipson (1935 A).

791/4. DESCHAMPSIA FLEXUOSA (L.) Trin. Germination factors: after-ripening is important (was incomplete in 5 months, complete 14-15 months); if un-after-ripened (a) darkness and (b) 30° C. are unfavourable, but after-ripened seed is less sensitive to external conditions.—Nelson and Maelagan (1935).

813/1. MOLINIA CAERULEA (L.) Mch. The paniele is poisonous before and during flowering, owing to the presenee of a eyanogenetic complex which disappears after flowering.—Jullet and Zitti (1935).

824. POA L. Chromosomes of *P. palustrus* L. (*P. serotina* Ehrh.), 2n = 28 (Avdulov, 1928), 42 (Stählin, 1929), 28 (three sources: tetraploid) and 21 (one source: triploid), Kiellander (1935), i.e., basie number 7 as in most other grasses.

824/11b. P. ALPINA, var. ACUTIFOLIA Druce, is identified by Nannfeldt (1935 B: 35) as *P. jemtlandica* (Almq.) Richt., whieh is a hybrid between *P. alpina* L. and *P. flexuosa* Sm.

824/12b. P. [LAXA Hanke], var. SCOTICA Druee. This is shown by Nannfeldt (1935 B) to be a species distinet from *P. laxa*, the correct name for whieh is *P. flexuosa* Sm. (type locality, Ben Nevis). A full list of known localities is given (p. 95-) in Sweden, Norway, Iceland and Scotland. The Scottish are Inverness: Ben Nevis; Cairntoul; Aberdeen: Lochnagar; [Forfar: Caenlochan ?, speeimens not seen]. The species is partial to bare mountain summits. [I have twiee searched for it without suecess at the summit of Ben Nevis, but it should be sought by climbers of the precipices

and spouts: A.J.W.]. It is readily distinguishable from *P. glauca* forms by the extremely short anthers (c. 0.6-1.0 mm. long). It is regarded by the author as a relict survivor of the glacial period.

824/14b. P. SUPINA Schrad. is held by Nannfeldt (1935 A; very well illustrated) to be a distinct species from *P. annua*. It does not appear to be rare in Sweden (from Schonen to Jemtland) and is now recorded from Latvia and Siberia. The most certain and convenient character to separate it from *P. annua* is the length of the stamens, about double as long as in *P. annua*. Sterile hybrids between the two species have been seen.

826/9. FESTUCA OVINA L. Fernald (1935: 250) gives a key to the eastern American allies of this group, the characters of the British plants concerned being:—

(a) Awns 1.3-3 mm. long.

F. ovina L. Culms 1.5-3 (-6) dm. high.; leaves .4-.6 mm. diam., 5-7 nerved; panicles 2-5 cm. long; spikelets 5-7 mm. long, 3-6 flowered; second glume 2.5-4 mm. long; lowest lemma 4.5-6 mm. long.

F. ovina, var. *duriuscula* (L.) Koch. Culms to 7 dm.; leaves .7-1.2 mm. broad, 7-9 nerved; panicles 4-10 cm.; spikelets 7-10 mm., 4-9 flowered; second glume 3.5-5 mm. long; lowest lemma 4.5-6 mm. long.

(b) Awnless or awns at most 0.6 mm. long.

F. vivipara L. Florets modified into leafy proliferous shoots; second glume 3-5 mm. long; lemmas membranaceous, not strongly inrolled, 4-6 mm. long; stamens wanting.

F. capillata Lam. Florets normal; second glume 2-2.7 mm. long; lemmas coriaceous, lightly inrolled, 3-3.5 mm. long; anthers 1.5-2 mm. long.

826/18. F. MYURUS L. "*Vulpia Myurus* (L.) Gmel., forma *hirsuta* Hack.," originally described from Portugal, is recorded for Spain, France, Switzerland, Bulgaria, Czechoslovakia, Germany and Sweden. With it is identified *Festuca megalura* Nutt. from North America. The form *hirsuta* is distinguished from typical *V. Myurus*, with which it has sometimes been found growing, by the lemmata being ciliate in the upper part. Intermediates have been observed. The form should be looked for in the British Isles.—Blom (1934 A).

827. BROMUS L. The measurements of various parts of *B. rigidus*, *B. Gussonii* and *B. sterilis*, taken from large numbers of individuals, are analysed, with support to the view that *B. Gussonii* is a hybrid of the other two species.—de Cugnac (1934).

827/19(2). BROMUS LEPIDUS Holmberg. Wein (1935: 91) tabulates the characters distinguishing this from *B. mollis*, and indicates that it was probably known to Ray, Tournefort and Scheuchzer. The distribution in Germany is discussed.

The species seems nearly always to occur in fields sown with *Lolium italicum* and is presumably introduced with the seed.—Tutin (1935).

828. Brachypodium Beauv. A critical account of four species from Europe and the Mediterranean region is given by Saint-Yves (1934).

The flowering and seeding habits of the two British species are detailed by Beddows (1935). *B. pinnatum* is shown to be normally cross-fertilised, with possible slight self-fertilisation. The various anther colours are constant on each plant. *B. silvaticum* has canary yellow anthers 3.5-4.5 mm. long, and self-fertilisation by autogamy and geitonogamy is possible, although in the open cross-fertilisation might also occur.

829. Lolium L. Hybrids between *L. perenne* × *L. temulentum* have been established by Jenkin (1935), the percentage of seed setting being relatively high, but that of germination and plant establishment good only if *L. perenne* was the female parent, although the reciprocal hybrids are similar; they are functionally male sterile but can be used as female with either parent as male. Smooth stem, relatively short glume, and awnlessness (all characters of *L. perenne*) are dominants, and the behaviour of other characters is described.

830/1×2. Agropyrum acutum. Its probable hybrid origin is confirmed by Simonet (1935), who shows that while in *A. junceum* 2n = 28 and in *A. pungens* 2n = 42, in *A. acutum* 2n = 35. The characters (tabulated) are intermediate or show dominance of one or other parent. The pollen is empty, and there are small grains indicative of cytological aberrations (pentaploidy). Its distribution in France is given.

830/2b. A. litorale Host. Wein (1935: 97) tabulates the characters separating this species from *A. repens*. In the single Thuringian locality sterile ± intermediate hybrids with *A. repens* occur.

839. Juniperus L. The two native species have been confused. In Ireland *J. communis* is not always erect but sometimes prostrate like *J. sibirica*.—Praeger (1935).

841. Pinus L. For a long study of the tracheids (diagrammatically illustrated) see Lewis, F. T. (1935). (*Pinus silvestris* is mentioned but the work appears to have been mainly done on *P. Strobus*).

844. Equisetum L. The intermittent or sporadic occurrence in most species of short internodes, flexuous stems, dichotomous or twin shoots, spiral sheaths, and semisterile and completely sterile cones, is considered to be the expression of physiological states rather than of genetical conditions.—Schaffner, J. H. (1934).

845/1. Cryptogramma crispa (L.) R. Br. Fernald (1935: 238, distribution map 245) discusses at length the differences between this, the North American *C. acrostichoides* Hooker, and the Himalayan *C. Brunoniana* Wallich, treating them as three varieties of *C.*

crispa (key, p. 244), of which our plant is var. *typica*.—Fernald (p. 245).

847/1. Eupteris aquilina (L.) Newm. This can grow (in France) on calcareous clays where decalcification of the surface assists, provided that the subsoil, whether permeable or impermeable, maintains the constant humidity needed by a plant with extremely rapid growth.—Gardet (1934). Stomata: see Smith (1935: 456).

850/1. Phyllitis Scolopendrium (L.) Newm. Occurs as rare relic from pre-glacial times, in unglaciated parts of North America.—Fernald (1935: 199, 201; distribution map, p. 200).

854/4. Polystichum Lonchitis (L.) Roth. Occurs as pre-glacial relic in unglaciated eastern N. America.—Fernald (1935: 199; distribution map, p. 207).

857/4. Cystopteris fragilis (L.) Bernh. The North American varieties are described by Weatherby (1935: key p. 375).

866/1. Ophioglossum vulgatum L. Incomplete nuclear division in the formation of the tapetum is described by Steil (1935).

870. Lycopodium L. The spores of the British species are very distinct, and are figured by Wilson (1934: plates 275-277). Those of some species require special treatment (see p. 14) before the appearance of the characteristic papillation can be seen. *L. alpinum* is not constantly distinguishable from *L. complanatum* by spore characters.

871/1. Selaginella selaginoides (L.) Link. Leaf epidermis figured by Satake (1934: 270 (English summary, p. 277)). Microspores and megaspores are critically described and figured by Reeve (1935: 343; plates 380, 381).

Characeae. Records from Urugnay of 11 Charophyta, compiled from notes left by the late James Groves. Several of them are British species.—Allen, G. O., and Herter, W. G. (1934).

872. Nitella Ag. The primary divisions of the genus adopted by H. Braun, *Monarthrodactylae*, *Diarthrodactylae*, and *Polyarthrodactylae*, were based on the number of cells of the branchlets and involve the inclusion of anomalous species in the same division. The present paper proposes as a more natural arrangement the division of the genus into two main primary divisions—(1) *Homococlemae*, species having all the branchlets in a whorl in a single circle and ± equal, and (2) *Heterococlemae*, species having them in more than one circle and of two distinct kinds.—Groves and Allen (1935).

BIBLIOGRAPHY.

Abbreviations of Titles of Periodicals.

AHB.Univ.Latv.=Acta Horti Botanici Universitatis Latviensis.

AHB.Univ.Tart.=Acta Instituti et Horti Botanici Tartuensis (Dorpatensis).

Amer.JB. = American Journal of Botany.
Ann.Bot. = Annals of Botany.
Archiv.Bot. = Archivio Botanico.
ASB.Polon. = Acta Societatis Botanicorum Poloniae.
BBC. = Beihefte zum botanischen Centralblatt.
BM.Tokyo = The Botanical Magazine, Tokyo.
Bot.Archiv. = Botanisches Archiv.
Bot.Gaz. = The Botanical Gazette.
Bot.Közlem. = Botanikai Közlemények.
Bot.Not. = Botaniska Notiser (Lund).
Bot.Tidskr. = Botanisk Tidsskrift (København).
BSB.Bulg. = Bulletin de la Société botanique de Bulgarie.
BSB.Fr. = Bulletin de la Société botanique de France.
BSB.Genève = Bulletin de la Société botanique de Genève.
BS.Broter. = Boletim da Sociedade Broteriana.
BSRB.Belg. = Bulletin de la Société royale de Botanique de Belgique.
B.Torrey BC. = Bulletin of the Torrey Botanical Club.
Contr.LBU.Montreal = Contributions du Laboratoire de Botanique de l'Université de Montreal.
Dansk BA. = Dansk botanisk Arkiv.
Engl.BJ. = Botanische Jahrbücher . . . bergründet von A. Engler.
Fedde Rep. = Repertorium specierum novarum regni vegetabilis. Herausgeber . . . Dr Friedrich Fedde.
Gard.Chron. = The Gardeners' Chronicle.
Jap.JB. = Japanese Journal of Botany.
J.Arnold Arbor. = Journal of the Arnold Arboretum.
J.B. = The Journal of Botany.
J.Ecol. = Journal of Ecology.
J.Gen. = Journal of Genetics.
JLS. = The Journal of the Linnean Society of London.
J.Wash.Acad.Sci. = Journal of the Washington Academy of Sciences.
Kew Bull. = Bulletin of Miscellaneous Information, Kew.
Le Bot. = Le Botaniste.
L.Western Bot. = Leaflets of Western Botany.
Magy.BL. = Magyar botanikai Lapok.
M.Göteb.BT. = Meddelanden från Göteborgs botaniska Trädgård (Acta Horti Gotoburgensis).
Mitt.Thür.BV. = Mittheilungen des Thüringischen botanischen Vereins.
New Phyt. = The New Phytologist.
NGB.Ital. = Nuovo Giornale botanico Italiano.
NW.Nat. = The North Western Naturalist.
Notes RBG.Edinb. = Notes from the Royal Botanic Garden, Edinburgh.
OBZ. = Österreichische botanische Zeitschrift.
PLS. = Proceedings of the Linnean Society of London.
PRS.Lond. = Proceedings of the Royal Society of London.
Rev.Sudamer.Bot. = Revista Sudamericana de Botánica.
RG.Bot. = Revue générale de Botanique.
Svensk BT. = Svensk botanisk Tidskrift.

VBV.Brandenb. = Verhandlungen des botanischen Vereins der Provinz Brandenburg.
Zeits.Bot. = Zeitschrift für Botanik.
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REPORT OF THE DISTRIBUTOR FOR 1935.

The number of plants sent in for distribution has been steadily declining for some years past, and this year is the lowest on record, only 1936 sheets, representing 163 gatherings, having been contributed. One is reminded of this marked falling by glancing at some of the earlier Reports. The peak was reached in 1912, when the late Mr Cryer distributed the unprecedented number of 8656 sheets, and the following year I myself dealt with 8582 specimens. The loss by death or resignation of several well-known contributors has thus greatly reduced the activities of the Club. My task has been, therefore, a comparatively light one this year, although I should like to repeat here what I said in 1914, namely, that the distributor's labours would be considerably reduced if all members used sheets of a uniform size, which should not exceed 17 in. by 11 in., and should be single and not double. Each gathering should also be enclosed in a cover. These rules were forgotten, or ignored, by several contributors. A number of badly dried specimens of common plants were not included in the return parcels. A reminder that the Club does not exist for the dissemination of rare and non-critical species is again necessary. One extremely local species of *Carex*, represented by 34 sheets, should not have been sent at all, considering its scarcity. As one member remarked to me, it is not a critical plant, and is one of those species which botanists would prefer to collect for themselves.

The thanks of the Club are again due to the following botanists for useful notes:—Mrs Drabble, Rev. H. J. Riddelsdell, and Col. A. H. Wolley-Dod; Dr G. Taylor, Messrs A. H. G. Alston, C. Norman, W. R. Phillipson, and A. J. Wilmott, of the British Museum; Dr W. B. Turrill, and Messrs J. S. L. Gilmour, C. E. Hubbard, and E. Nelmes, of Kew; and Messrs W. C. Barton, C. E. Britton, Rex Knowling, W. H. Pearsall, and A. L. Still.

A. Bruce Jackson.

British Museum (Nat. Hist.),
Cromwell Road,
S. Kensington,
18th May 1936.

LIST OF PARCELS RECEIVED.

	No. of Sheets.	No. of Gatherings.
G. M. Ash	52	3
E. B. Bishop	29	3
C. E. Britton	140	8
G. C. Brown	51	5
Preb. R. J. Burdon	54	4
J. Chapple	163	13
E. S. Edees	39	3
H. Foster	95	9
J. D. Grose	132	10
P. M. Hall	50	3
R. Knowling	42	4
J. W. Long	101	8
W. H. Pearsall	28	2
F. Rilstone	245	17
R. W. Robbins	13	1
W. A. Sledge	36	3
H. S. Thompson	183	28
National Museum of Wales	156	10
E. C. Wallace	229	17
C. Waterfall	98	12
	1936	163

Aconitum anglicum Stapf. Peterston-super-Ely, Glamorgan, v.-c. 41, June 14, 1935.—A. L. Still. Comm. E. C. Wallace.

Sisymbrium Irio L. Garden, Newport, Isle of Wight, July, August, and September 1935. Comes as a weed in my garden since I sowed seed from a plant found near Newport some years ago.—J. W. Long.

Thlaspi alpestre L., form approaching var. *occitanicum* (Jord) ? River-bank near Llanrhystyd, Cardigan, v.-c. 46, May 5, 1935. (Ref. No. 1043).—J. D. Grose. "I do not think that this plant can be referred to *T. occitanicum* Jord. In Britain, as in France, *T. alpestre* is a polymorphic species, and we have at least four different forms (this plant, the Teesdale *T. alpestre*, the Matlock *T. virens*, and the lilac flowered form of the Mendips) that have never been accurately distinguished. There are lengthy notes on the group in the Reports of the Watson Exchange Club for 1929-30 and 1931-32. The form usually so named, but none of our British forms match the Continental plants whose names they bear."—Wilmott.

Raphanus Raphanistrum L., var. *flavus* Schub. et Mart. Abundant in a sandy arable field, Lower Yard Farm, Godshill, Isle of Wight, v.-c. 10, September 30, 1935. (Ref. No. 1589). Salmon, *Fl. Surrey*, (1931), 151, says "this plant has two colour forms, a white one with lilac veins (forma *alba* F. Gér.) and a pale yellow one similarly veined (forma *ochrocyanea* F. Gér.)." The form now distributed is neither of these, having the petals concolorous and not veined with lilac: it is constant in this locality, where I have known it for many years, and no other colour forms grow with it. It is the var. *flavus* of Druce *Fl. Berks.* (1897), 70—"Differs in the flowers being uniformly yellow"—but I am indebted to Dr Sprague for the information that it should be cited as var. *flavus* Schub. et Mart. Dr Druce evidently discovered this authority also, as "Schub. & Mart." is substituted for "Dr." in his writing in his own copy of the *British Plant List*, ed. ii. The name is synonymous with var. *sulphureus* Rouy et Foucaud *Fl. Fr.* (1895), 66, which is derived from sub-var. *sulfurea* (F. Gér.), "fleurs à pétales veinés de jaune."—P. M. Hall. "But the *β flavum* Schuber & Martens (1834 *Fl. Würtemb.*, 415), is the forma *ochrocyanea*, since it is described as 'floribus flavis, violaceo-venosis, habitu minus robusto.'"—Wilmott.

Viola canina L. Birkdale, Lancs., April 23, 1935.—H. Foster.

Viola ——. Ramsfold Farm, Lurgashall, W. Sussex, May 1935.—R. J. Burdon. "The best of these are excellent specimens of *Viola variata* Jord., var. *sulphurea* Drabble."—Hilda Drabble.

Viola ——. Honsesteads, Northumberland, July 15, 1935.—R. J. Burdon. "*Viola lutea* Huds., δ *amoena* Henslow. Judging from its locality these plants grew amongst grass on limestone. If this is so they are the typical specimens collected in such a locality, each speci-

men being really only a flowering stem of the deeply rooted perennial stock."—Hilda Drabble.

Silene maritima With. Near Bwlch-y-Clawdd, Glamorgan, v.-c. 41, in considerable quantity (inland locality). Alt. 1500 feet. July 1935. Coll. John Watkins. Comm. Department of Botany, National Museum of Wales. "The material is fairly typical *Silene maritima* L., except that the leaves are larger than they usually are in sea-coast habitats. *S. maritima* is more likely to meet *S. Cucubalus* (*S. vulgaris*) in inland localities than on shingle beaches, and the occurrence of hybrids in such places should be more likely than on shingle beaches, etc. In Central Wales *S. maritima* extends more or less continuously high up the river valleys from the coast, living amongst the sands and pebbles lateral to the normal summer river bed. Whether the actual spread was up or down the valley is still an unanswered question—possibly it has occurred in both directions. Near the head of one western Welsh valley the writer found hybrid plants closely associated with typical *S. maritima*. It is intended to publish an account of this and other Welsh *Silene* populations in a later part of the series of papers on the genus now appearing in the *Kew Bulletin*. Information regarding other parts of Wales (or from any other part of the distributional areas of *S. maritima* and *S. Cucubalus*) will be gladly received at Kew. Whenever possible fruits and seeds should be collected along with flowering specimens."—Turrill.

Silene dubia Foster. Dungeness, Kent, June 22, 1935.—A. H. Foster. "This is ordinary *S. nutans* L., and not *S. dubia* Herbich, which is not a British plant. Vide *Cambridge British Flora*, iii, p. 79, and *Journ. Bot.*, lxix, p. 288 (1931)."—Pugsley.

Stellaria uliginosa Murr. Growing in dense shade amid *Carex pendula* and *C. paniculata* in a wet wood, Matfield, Kent.—W. H. Pearsall.

Sagina ciliata Fr., var. *patula* Jord. Cobo, Guernsey, June 8, 1928. Named thus by the late C. E. Salmon.—I. A. Williams.

Geranium Robertianum L. var. with white flowers and yellow anthers. Garden, Newport, Isle of Wight, August 1935. Comes as a weed in my garden since it was introduced ten or twelve years ago. It is constant in character, and differs from that referred to in the Report for 1928, inasmuch as it has pale yellow anthers.—J. W. Long. "Just an albino of *G. Robertianum* L.; presumably the anthers are yellow only because the plant produces no anthocyanins at all and not because it has not the factor for the usual anther-colour."—Wilmott.

Geranium nodosum L. Abnormal growth, garden, Newport, Isle of Wight, v.-c. 10, July 1935. This and the normal form flourish exceedingly in the light soil of my garden. The root continues to increase in size and all the flowers from the one plant are of the same peculiar growth.—J. W. Long.

Medicago sativa L. Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41, August 1935. Ref. No. M.1, flowers deep purple; Ref. No. M.2, flowers pale-blue; Ref. No. M.3, flowers variegated—purple to blue green. Coll. A. E. Wade, Comm. Department of Botany, National Museum of Wales. "These are presumably the progeny of one of the numerous cultivated forms of lucerne (Alfalfa), *Medicago sativa* L. From the variegated flowers of M.3 the form may possibly have been one of the Grimm types. (Grimm lucerne originated in Germany at the beginning of last century and was introduced into America by a German settler of that name. It is the product of the cross *M. sativa* × *M. falcata* = *M. varia* Martyn). It is now widely cultivated and is hardier than pure *M. sativa*."—Gilmour. "Such variations in colour are not unusual in crops of cultivated lucerne."—Britton. See *Rep. B.E.C.*, x, part i, 393-395, 1932, and part v, 793, 1934.—Ed.

Lotus angustissimus L. Rough field by Derry's Wood, near Wonersh, Surrey, v.-c. 17, August 22, 1935.—E. C. Wallace.

Lotus tenuis W. & K. By the Mitcham Gravel Pond, Surrey, August 15, 1935.—Rex Knowling.

Ornithopus compressus L. Clover-field, Sandown, Isle of Wight, May 1935. Has been known at Sandown for several years. From the way it has established itself in many parts of the field, I think it must have been there for some considerable time.—J. W. Long. "Correct; has been several times recorded as an alien."—Ed.

Vicia lathyroides L. Birkdale, Lancs, April 23, 1935.—H. Foster.

Prunus Cerasus L. Hedge, Wansdyke, Marlborough, N. Wilts, v.-c. 7, April 27, 1935 (Ref. No. 1021), and fruiting specimens, July 4, 1935 (Ref. No. 1222).—J. D. Grose.

Rubus Selmeri Lindeb. Heathland by Aerodrome, Berechurch, N. Essex, v.-c. 19, July 29, 1935. (Ref. No. 2510). Petals pink, stamens exceed styles, sepals spreading.—G. C. Brown. "Yes, characteristic."—Barton and Riddelsdell.

Rubus criniger (Linton) Rogers, forma? Heathland by Aerodrome, Berechurch, N. Essex, v.-c. 19, July 29, 1935. (Ref. No. 2511). Petals white, stamens exceeding styles, sepals loosely reflexed. This belongs to a series of which I have made a large number of gatherings within a few miles of Colchester, and all of which either Revs. W. Moyle Rogers or H. J. Riddelsdell (or both) saw. Rev. H. J. Riddelsdell said, "All belong to the same series, varying somewhat in certain details. I have little doubt they are rightly placed under *R. criniger* Linton." All the above agree in mostly ternate leaves, with somewhat cuneate-based terminal-leaflet, large simple leaves on the upper part of the panicle and a general greyish-green appearance. For one or two Rev. W.

Moyle Rogers suggested " a hairy form of *podophyllus* ?"—G. C. Brown. " It seems best to leave this as named for the present."—Barton and Riddelsdell.

Rubus ——. Heathland by Aerodrome, Berechurch, N. Essex, v.-c. 19, July 29, 1935. (Ref. No. 2512). Petals white, stamens about equalling styles, sepals erect in flower, then rising and clasping fruit. This plant appears to be identical with specimens I sent in 1933 (Ref. No. 2107) from bushes 500 yards away as *Rubus tereticaulis* P.J.M., vide *Report*, 1933, p. 757, but previously named *viridis*. Examination of this material seems to point rather to *viridis*: the panicles seem too strongly developed for *serpens* which it resembles in the clasping fruit sepals.—G. C. Brown. " This has already been distributed by Mr Brown (Nos. 1509, 1538, and 2107) and commented upon. We are studying the group and prefer to add nothing at present."—Barton and Riddelsdell.

Rubus griseoviridis Bart. & Ridd. Perranzabuloe, W. Cornwall, August 3, 1935.—F. Rilstone. " Yes, some of the panicles are heavy and so have lost the characteristic shape. This frequently happens with *Rubus* in Cornwall."—Barton and Riddelsdell.

Rubus argenteus W. & N. Perranzabuloe, W. Cornwall, August 1935.—F. Rilstone. " A Cornish form of the aggregate with underleaf soon losing felt and becoming harsh to the touch, hairy rachis and (in most panicles) rather strongly armed. Our British forms do not fit well into the varieties described by Continental authors."—Barton and Riddelsdell.

Rubus dumnoniensis Bab. Perranzabuloe, West Cornwall, August 1935.—F. Rilstone. " Differs from Babington's description more than from Briggs's specimens in our herbarium. But differs from both in the pyramidal, very floriferous panicle, with rachis prickles strong and long-based, often not straight. It may not be pure *dumnoniensis*."—Barton and Riddelsdell.

Rubus adscitus Genev. (panicles only). Polperro, East Cornwall, July 1934.—F. Rilstone. " Yes, good panicles."—Barton and Riddelsdell.

Rubus cissiburensis Bart. & Ridd. Shade-grown form climbing 8-10 ft. high in a wet wood with Alders and *Viburnum Opulus* at Limpsfield, Surrey. Panicles, July 12, 1935; stem and fruit, July 28, 1935. Petals pink, stamens pale pink. Styles cream-coloured.—R. W. Robbins. "Well prepared specimens of a form modified by situation; the stem and its prickles are weak, the stipules set far up the petiole, the panicle and its parts elongated. But the plant is unmistakable."—Barton and Riddelsdell.

Rubus dasyphyllus Rogers. Castle Eden Dene, Co. Durham, July 25, 1935.—R. J. Burdon. "*R. dasyphyllus* Rogers, shade grown."—Barton and Riddelsdell.

×*Rosa Bishopi* W.-Dod (*R. micrantha* × *agrestis*). Slopes of chalk down, near Harting, West Sussex, v.-c. 13, August 16, 1929; July 30, 1931. (Ref. Nos. R.954, R.955, and R.956). Several bushes scattered about within a small area, where *R. micrantha*, var. *typica*, is common, and one bush of *R. agrestis*, var. *typica*, f. *arvatica*, grows closely adjacent. This hybrid is on the *micrantha* side. It was first found by me August 8, 1928, and has been passed by Keller. For description, etc., see Wolley-Dod, *Revision of the British Roses*, p. 99.—E. B. Bishop. "These specimens agree with my type specimen from this locality."—Wolley-Dod.

×*Rosa surreyana* W.-Dod (*R. obtusifolia*, var. *Borreri* × *canina*). Bushy rough pasture on wealden clay, Chiddingfold, Surrey, v.-c. 17, September 17, 1930; June 20, 1931; August 12, 1931; August 10, 1932. (Ref. Nos. R.797, R.798, R.799, and R.1105). All from the same bush (i.e., from the first one found at Chiddingfold, *not* from the original Dunsfold bush found in August 1929). Yet another bush has since been found by me at Chiddingfold, apparently of the same form as that now distributed. In both cases, the plants are obviously on the *Borreri* side. For description, etc., see Wolley-Dod, *Revision of the British Roses*, p. 103.—E. B. Bishop. "These specimens all agree with the type specimen in my herbarium."—Wolley-Dod.

Rosa micrantha Sm., var. *Burgessi* Bishop. Rough bushy field on wealden clay, near Haslemere, Surrey, v.-c. 17, July 24, 1935. (Ref. No. R.1791). This very distinct new variety was found by me on July 4, 1932, and is fully described in *Rep. B.E.C.*, 1933, pp. 468-471. This year it flowered and fruited most magnificently.—E. B. Bishop. "All correctly named."—Wolley-Dod.

Sorbus pinnatifida Ehrh. Cultivated tree in front of Buckingham Chapel, Clifton, W. Glos., June 18 and (fruit) September 6, 1935. Ripe fruit scarlet, rather small. Twigs very rugged and brittle.—H. S. Thompson. "One of the several forms to which this name is often applied, but both the botany and the nomenclature of them need further investigation."—Wilmott.

Sorbus scandica Fries. Near bank of R. Avon, below Leigh Woods, N. Somerset, June 16 and October 5, 1935. Ripe fruit deep red, rather large and slightly pear-shaped.—H. S. Thompson. "Yes, but the correct name is *S. intermedia* (Ehrh.) Pers."—Wilmott.

Sorbus intermedia Ehrh. Hedge, Wroughton, N. Wilts, v.-c. 7, September 12, 1935. (Ref. No. 1401).—J. D. Grose. "Yes, but the authority should be (Ehrh.) Pers."—Wilmott.

Sorbus Aria Crantz, var. *longifolia* Pers. All material from one tree, Wray Lane, Reigate Hill, Surrey, v.-c. 17, May 28, 1935. Leaf shape not so well marked on the flowering shoots. A smaller tree not far away has even more narrow leaves than this tree, but has not borne flowers yet.—E. C. Wallace. "This is a narrow-leaved form of *Sorbus Aria* Crantz, and agrees with the description of var. *longifolia* Gren. in Rouy and Camus's *Fl. France*, vii, p. 21; but the citation of Persoon for the variety seems questionable."—Pugsley. "I cannot improve on the identification."—Wilmott.

Sorbus latifolia Pers. Tree at back of Clifton Parish Hall, W. Glos., June 13, and October 21, 1935. Ripe fruit dull orange, 10-14 mm. long, flat topped.—H. S. Thompson. "Is *S. latifolia* (Lam.) Pers. in the broad sense, but not the typical (Fontainebleau) form of Lamarck. I cannot yet give it a more precise name."—Wilmott.

Ribes alpinum L. Near the Ham Rock, Dove Dole, Derbyshire, v.-c. 57, May 19, 1935. Each sheet carries both male and female flowers.—J. E. Lousley and E. C. Wallace.

Myriophyllum verticillatum L. Muddy ditch, Radley, Berks, August 3, 1935. Some of these specimens—those growing in shallower water—tend to merge into the var. *pectinatum* DC.—J. Chapple. "Yes."—Pugsley.

Callitriche ——. Sharpham, Somerset, July 6, 1935.—H. S. Thompson. "Poor material, apparently subterrestrial *C. obtusangula* Le Gall."—Pearsall.

Epilobium hirsutum L., *flore albido*. Right bank of R. Chew, near Chew Magna, N. Somerset, July 29, 1935. Flowers pure white when gathered.—H. S. Thompson.

Epilobium obscurum Schreb., f. *strictifolia*. Copse, Brook, Godalming, Surrey, August 4, 1935. (Ref. No. Ep.175).—G. M. Ash.

Epilobium adenocaulon Hausskn. Waggoner's Wells, North Hants, v.-c. 12, August 5, 1935, teste G. M. Ash. (Ref. No. 1526). Shady damp ground at edge of wood near pond, very plentiful. During the war there was a large encampment of Canadians on the neighbouring Bramshot Common.—P. M. Hall.

Epilobium adenocaulon Hausskn. × *obscurum* Schreb. Kitchen garden, Lower Birtley Farm, Witley, Surrey, July 20, 1935. (Ref. No. Ep.170).—G. M. Ash.

Epilobium adenocaulon Hausskn. × *parviflorum* Schreb. Copse, near Plaistow, W. Sussex, August 10, 1935. (Ref. No. Ep.176).—G. M. Ash.

Gaura coccinea Purs. Pembrey Burrows, Carmarthen, v.-c. 44, July 5, 1935. Native of North America.—Coll. G. W. Hollis. Comm. Department of Botany, National Museum of Wales. "Correct."—Ed.

Apium nodiflorum (L.) H. G. Reichb., ? var. *ochreatum* (DC.) Dr. Port Meadow, Oxford, August 13, 1935. These specimens do not fit the descriptions of any of the three varieties given in the *British Plant List*, but appear to have combined in them some, but not all, of the characters of vars. *ochreatum* DC. and *longipedunculatum* F. Schultz. On the whole, I think the majority of these plants come nearer to var. *ochreatum*, but they differ from that variety by having, in some instances, peduncles longer than the umbel rays, much longer (up to 4.5 cm.) than in any specimens of this variety I have seen so named by Mr Riddelsdell, and by sometimes having three involucre bracts. Both varieties have been recorded from Port Meadow (see Druce *Fl. Oxon.* ed. ii, 191, 1927), and I had this in mind when making the present gathering, which I do not think is a mixture; although one or two plants resemble var. *longipedunculatum* superficially in having long slender stems and long peduncles, they lack the "involucre always present."—J. Chapple. "Not De Candolle's variety. See figure of type of the variety from De Candolle's herbarium in *Journ. Bot.*, 1906, t. 479. Has much of the appearance of *A. repens*, differing chiefly in the non-rooting stem and in the lesser number of bracts to the umbel. No doubt one of the intermediate forms between *A. repens* and *A. nodiflorum* which Riddelsdell says grow at Port Meadow."—Britton. "With the exception of one specimen I do not think any of this is var. *ochreatum* DC. It seems to be merely *A. repens* which has not been able to creep from the surrounding vegetation, and so does not root at the nodes—some of the specimens have commenced to root. The character of the number of involucral bracts as a means of separating *A. nodiflorum* from *A. repens* is shown by this collection to be of little worth, since on some specimens one umbel can be seen to have several bracts and another few or none."—Norman.

Apium repens (L.) H. G. Reichb. Port Meadow, Oxford, August 13, 1935. I hope that these specimens in fruit will be acceptable to members as, apparently, it has never before been distributed in this condition. These specimens agree well with the figure and description in Butcher & Strudwick's *Further Illustrations*, and the description of Riddelsdell & Baker, *Journ. Bot.*, 189, 1906, but the length of the peduncles varies considerably, due, no doubt, to the varying height of the thick grass in which the plant grows.—J. Chapple. "This seems good *Apium repens* and matches Wolff's figure in the *Pflanzenreich*, iv, 228, p. 42, t. 2, fig. E, (1927)."—Norman.

Foeniculum ——. Waste land, Southampton, September 1935. A weak, spreading plant, less pungent and aromatic and about half the height of *F. vulgare*. The rays of the umbel are fewer and the fruits though immature seem distinctly larger. Is it *F. dulce* DC. ?.—J. W.

Long. "The var. *dulce* (Mill.) Thellung is said (Hegi, *Ill. Fl.*) to differ in cultivation by being taller (not shorter), having tubular stem (not filled with pith) as well as by its paler sweet-tasting (not disagreeable) ripe fruits. In the wild state it is only certainly distinguishable by the ripe fruits (here wanting)."—Wilmott.

Oenanthe pimpinelloides L. Pasture on liassie ground near Street, N. Somerset, v.-c. 6, July 6, 1935. The hardness of the ground prevented the uprooting of the tubers.—H. S. Thompson. "Yes."—Norman.

Oenanthe Lachenalii C. Gmel. Tidal estuary of R. Brue, near Highbridge, N. Somerset, July 6, 1935.—H. S. Thompson. "Correct."—Norman.

Caucalis nodosa Scop. Dry-bank by Port Meadow, Oxford, August 2, 1935.—J. Chapple. "One of the specimens sent me has fruit on a peduncle 18 mm. long, and might come under the var. *pedunculata* Rouy. In Somerset we find, as in this case, some of the umbels are peduncled and some sessile on the same plant."—H. S. Thompson. "Correct."—Norman.

Galium palustre L. Canal, Compton Beauchamp, Berks, v.-c. 22, August 13, 1935. (Ref. No. 1367).—J. D. Grose.

Galium tricorne Stokes. Cultivated field, Shipton-on-Cherwell, Oxon, August 15, 1935.—J. Chapple.

Galium Mollugo L., var. *pycnotrichum* H. Br. Warlingham, Surrey, July 10, 1934. (Ref. No. 4149). Shade-grown plants, from the edge of a wood, with characters less well-marked than examples previously distributed.—C. E. Britton.

Galium sylvestre Poll. Downland, near Dorking, Surrey, v.-c. 17, June 29, 1935. Both downy and pubescent plants occurred here, one of the few stations for this plant in Surrey. The plants contributed are all the glabrous form.—E. C. Wallace. "This plant differs considerably from the *G. sylvestre* of Cheddar and other limestone districts of Britain, and has been referred to var. *nitidulum* (Thuillier); but the forms of the group are still imperfectly understood. Since its discovery on Reigate Hill in 1894 it has been found in a number of localities along the chalk range in Surrey."—Pugsley.

Galium uliginosum L. Dry woodland track, Marlborough Forest, N. Wilts, v.-c. 7, August 1, 1935. (Ref. No. 1318). Fruiting specimens, September 5, 1935. (Ref. No. 1392a). It seems curious that this plant should be growing in a very dry place.—J. D. Grose.

Erigeron acer L. × *canadensis* (*Hulsenii* Kerner) ? Waste ground, Ashton Gate (Bristol), N. Somerset, August 9, 1935. Growing with both

parents, in Miss Roper's locality of 1911. Also specimens of *E. acer* gathered same place and date, for comparison.—H. S. Thompson. "These are not like Miss Roper's specimens, which are clearly hybrids and agree with Vatke's original description (*O.B.Z.*, 21, 346: 'Kerner' is no doubt due to illegible script). These lack the branching inflorescence and scarious margined phyllaries of the hybrid, and seem to be small specimens of *E. acer*."—Wilmott.

Iva xanthifolia Nutt. Garden weed, Brynteg, Efail Isaf, near Pontypridd, Glamorgan, v.-c. 41, August 28, 1935. Coll. R. J. Wilks. Comm. Department of Botany, National Museum of Wales.

Cirsium acaule (L.) Weber, var. *caulescens* (Pers.). In large tufts and very variable, in long grass on border of Hampton Down, Bath, N. Somerset, August 14, 1935.—H. S. Thompson.

Cirsium eriophorum Scop., subsp. *britannicum* Petrak. Near top of Ursleigh Hill, above Pensford, N. Somerset, August 29, 1905. Legit Ivor W. Evans, who suggested × with *lanceolatum*. I believe it to be pure, and have often looked for the × in that and other localities in N. Somerset.—H. S. Thompson.

Artemisia vulgaris L., form or variety with yellow flowers and green stems. Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41, September 1935. Six plants were noted.—Coll. A. E. Wade. Comm. Department of Botany, National Museum of Wales. "For those who name these forms there is the var. *flavescens* Rostrup ex Lange, 1886-8 (*Haandb. danske Fl.*, ed. 4, 325—capitula drooping, together with stem and leaves yellowish). The earlier reference cited (*Bot. Tidskr. Kjob.*, 3, 92—not '91') only gives a Rostrup locality without description of the variety."—Wilmott.

Artemisia vulgaris L. Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41. This form differs from the specimens labelled var. *coarctata* Fors. in having somewhat broader capitula and less stiffly erect inflorescence.—Coll. A. E. Wade. Comm. Department of Botany, National Museum of Wales.

Artemisia vulgaris L., var. *coarctata* Fors. Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41. September 1935.—Coll. A. E. Wade. Comm. Department of Botany, National Museum of Wales. "The variation in the inflorescence of this common weed appears to be as great as that of the cutting of the foliage. In the British Isles there does not appear to be any correlation of characters on which subspecies ('varieties') can be founded. My strong opinion is that in such circumstances varietal names are worthless—a systematic nuisance—for they do not refer to 'kinds of plants' (lineages) but only indicate individuals or separate genetic factors and/or their combinations. Moreover, if used, they should indicate single characters (or genetically

coupled groups), but when they have been given to indicate some particular combination of characters they should be retained for that combination only, and not used for plants with only some of the characters mentioned. Otherwise they become meaningless, for some authors reject some characters, and others reject others. None of these plants is strictly *A. coarctata* Forselles, which was a Finnish plant with leaves having revolute margins and narrow linear segments, etc., etc. These plants with tight inflorescence are said to occur on maritime sands and strands. Transplant experiments to determine the effect (if any) of conditions on the density of the inflorescence would be helpful, for dense inflorescences seem to occur inland also. Until further evidence is forthcoming, the British var. *coarctata* scarcely seems worth distinguishing." —Wilmott.

Picris spinulosa Bertol. Longfield, W. Kent, August 19, 1935. (Ref. No. 4218). Coll. A. Beadell. Leg. C. E. Britton. This plant, brought to me for identification, was subsequently seen in abundance in and about an old chalk-pit. The examples distributed agree well with specimens of *P. spinulosa* Bertol. from the south of France and Italy, in the Herbarium of the British Museum (Nat. Hist.). The species has a Mediterranean distribution. Nyman, *Conspectus*, gives South of France, Liguria, Sicily, Southern Italy, Dalmatia, and Macedonia. Dunn, *Alien Flora*, states that it has been recorded as a grain-introduced " casual " in England. From *P. hieracioides* it is recognised at once by its peculiarly strict stem, bearing at the apex cymosely-arranged short branches terminating in capituli, and below these are usually short sub-erect branches bearing one or more capituli. As the species was flowering profusely and bearing abundant ripe fruit, it may possibly become established in the south of England.—C. E. Britton. " The foliage, indumentum, flowering heads and fruits of these specimens are those of *P. hieracioides* L., and their only distinguishing feature seems to be the subracemose inflorescence. French botanists have questioned whether *P. spinulosa* Bert. should be held specifically distinct from *P. hieracioides*, and I think these examples are but a form of the latter."—Pugsley. " The authority for the name should be ' Guss.' not ' Bert.' : although Gussone cites ' Bertol. ined.' the publishing author *must* be cited. Normally one would cite it as ' Bert. ex Guss.,' but Bertoloni himself (*Fl. Ital.*, viii, 374) disowns it, citing ' *P. spinulosa* Guss. Syn.' as a mere synonym of *P. hieracioides*. The characters given by Mr Britton are not the original ones (hairier, phyllaries lanceolate acuminate, flowers a little smaller), but are those used by modern systematists who, however, almost universally reduce the plant to the rank of one of the forms of the variable *P. hieracioides*. The observations of Bruyas (1891 : *Soc. Dauph.*, ser. 2, No. 386) indicate that this strict habit of growth is caused by dry conditions, which might agree with the statement (Fiori : *Fl. anal. ital.*, ed. 2) that it is the only form in southern Italy, and possibly would account for these plants gathered in one of our dry summers. Further field observations (and gathering in

a wet season) are desirable: in any case these do not match the *extreme* Sicilian plants (see Strobl, 1874, in *Herb. Mus. Brit.*) and the form can scarcely be regarded as a species."—WILMOTT.

Hieracium maculatum Sm. Hedgebank in lane, Warninglid, both in East and West Sussex, June 22, 1935.—E. C. WALLACE. "I think a slender form of *H. maculatum* Sm., with heads more pilose and less glandular than usual."—PUGSLEY.

Erica cinerea L., with pale pink flowers. A few sheets from Blackdown, W. Sussex, v.-c. 13, July 28, 1935.—E. C. WALLACE.

Limonium humile Mill. × *vulgare* Mill. With both parents in some abundance on the west shore of Thorney Island, W. Sussex, v.-c. 13, August 11, 1935.—E. C. WALLACE. "Nearer *L. humile* Mill. than Mr Brown's specimens, and very similar to those originally collected at Bosham by Linton."—PUGSLEY.

Limonium humile Mill. × *vulgare* Mill. = × *Neumani* C. E. Salmon? Saltings, Alresford Creek, N. Essex, v.-c. 19, August 5, 1935. (Ref. No. 2508). A very distinct group of plants amongst abundant *L. vulgare* and scattered plants of *L. humile*. Flowers much brighter in colour and habit quite distinct. It seems to agree well with C. E. Salmon's description in *Journ. Bot.*, 1904, p. 361, and to be a good intermediate. —G. C. BROWN. "I think correctly named; much like the form described by C. E. Salmon (1904: *Journ. Bot.*, xlii, p. 361)."—PUGSLEY.

Symphytum tuberosum L. Hort., Mayfield, July 1935. Origin, roadside near Maresfield, East Sussex, July 1934. The flowers were dingy yellow, but some of them have assumed a slightly purplish tinge in drying. This fact and that they produced no fruit in my garden makes me suspect that there may be some hybridity. Plants at Tunbridge Wells have much brighter yellow flowers, with no purplish tinge in drying, though they almost entirely lose the yellow colour in drying.—A. H. WOLLEY-DOD. "The dingy yellow, slightly purple-tinted flowers of these specimens are by no means rare in *S. tuberosum* L., and there is no reason to attribute them to hybridity. The date of flowering shown on the labels (July) is very late for this species."—PUGSLEY.

Myosotis collina L. Birkdale, Lancs., April 23, 1935.—H. FOSTER.

Myosotis versicolor Sm., var. *Balbisiana* (Jord.). Jevington Downs, East Sussex, May 12, 1935. The flowers are bright yellow at first, fading to pale yellow, and required selection to gather them from among specimens with pale yellow flowers turning bluish, which seemed to be almost confined to those in more sheltered spots and taller. Salmon, *Fl. Surrey*, p. 467 (1931) said he could see no evidence of the other characters defined by Jordan, who described it as a species and suggested that it may occur with pale yellow flowers turning bluish. See also *Rep. B.E.C.*,

1931, p. 834, where it is pointed out that there is another yellow-flowered species, *M. lutea* Hoffm. & Link, which is confined to the Iberian Peninsula. See also Willk. & Lange *Prod. Fl. Hisp.*, ii, 504, where he names *M. lutea*, which he attributes to Persoon, and makes no mention of *M. Balbisiana* Jord. The specimens now sent seem to be nothing but a dwarfed colour form of *M. versicolor*.—A. H. Wolley-Dod.

Verbascum virgatum Stokes. Orig., waste ground, Colchester, v.-c. 19, 1933. Hort., Colchester, July 1935.—G. C. Brown.

Scrophularia alata Gilib. Stream, Shalbourne, S. Wilts, v.-c. 8, August 7, 1935. (Ref. No. 1359).—J. D. Grose. "In B.E.C. 1931 Rep., 568-9, Druce gave the views of Drs Goddijn and Goethart on the British forms of *Scrophularia*. According to the botanists named, the correct name of the plant known in Britain as *Scrophularia alata* Gilib. is *S. Neesii* Wirtgen, and specimens from Shalbourne were so identified by the botanists in question."—C. E. Britton. "If the views of Drs G. and G. are correct the name would be *S. Ehrharti* Stev., 1840 (= *S. Neesii* Wirtg., 1844), but my specimen is *not S. Neesii* Wirtg. If *S. umbrosa* Dum. is regarded as conspecific—forma *umbrosa*—that name, being older, must be retained, and *Ehrharti* must be made the forma. The name *S. alata* Gilib. is illegitimate."—Wilmott.

Sibthorpia europaea L. Ventongimps, W. Cornwall, September 9, 1935.—F. Rilstone.

Veronica persica Poir. No. 1: Derelict garden plot, Callestick, West Cornwall, July 25, 1935. No. 2: By north side of hedge, derelict garden, Callestick, West Cornwall, July 25, 1935. No. 3: Border of cornfield, Lambourne, West Cornwall, July 12, 1935. No. 4: Derelict garden, Callestick, West Cornwall, October 8, 1935. Nos. 1 and 3 show the usual cornfield growth of this plant, in Cornwall at least, with elongated flowering stems and bracts becoming very small towards the apex. No. 2, in the shade of the north side of a hedge, is not so pronounced, while the October gathering, No. 4, is an autumn growth of No. 1 after a period of rain. The plant looks entirely different because the largest leaves on the plant are now the bracts near the apex. All have the pale lower petal and simple leaf toothing of var. *Aschersoniana* Lehm.—F. Rilstone. "A useful series. No. 2 and No. 4 *at least* would doubtless have been placed by the late Messrs Drabble and Little under var. *Aschersoniana* Lehm. When collecting large series of this *Veronica* in 1931 and 1932 I observed that by October and early November many of the plants became quite bushy at the top, so thickly developed were their large leaves. They were growing in rich soil."—H. S. Thompson.

Euphrasia curta Fries, f. *glabrescens* (Wettst.). Waste, sandy field, Wick Farm, Headington, Oxon, August 12, 1935. The name was supplied by Mr Pugsley. These specimens, growing in a waste sandy field which a few years ago was under cultivation—an unusual habitat?

—when collecting, I took to be *E. nemorosa*, var. *ciliata* Drabble, which is not uncommon in Oxon.—J. Chapple.

Euphrasia ——. Castle Eden Dene, Co. Durham, July 27, 1935.—R. J. Burdon. "I do not know whether these specimens, which show considerable variation, were collected in a single station. Some are normal *E. confusa* Pugsl., while others appear to be small examples of *E. nemorosa* Löhr. A few have finely glandular foliage, which may occasionally be seen in *E. confusa* when there is no ground for suspecting hybridity with a normally glandular species. If these plants all grew in company, they are probably of hybrid origin, *E. confusa* × *nemorosa*."—Pugsley.

Euphrasia ——. The Cheesewring, near Liskeard, Cornwall, August 1935. Coll. E. S. Edees. "*E. confusa* Pugsl., luxuriant."—Pugsley.

Melampyrum pratense L., forma. Epping Forest, S. Essex, v.-c. 18, July 31, 1935. (Ref. Nos. 4212 and 4213). Distributed from two localities where they are the only form of *M. pratense* L. met with. The growing plants were distinguished by their depressed habit, the short stem giving off elongated prostrate (not decumbent) branches, frequently again branched. I cannot see how these plants may be kept apart from *M. pratense* L., **vulgatum* (Pers.), f. *divaricatum* Kern. in Blytt's *Haandbog I Norges Flora* (1906), p. 642. Beauverd, in the key to the forms of *M. pratense* L., separates the forms *lanceolatum* and *divaricatum* geographically, the first-named being a plant of middle Europe (including Britain) and *divaricatum* recorded from Sweden and Lapland. As the name implies, the feature of the latter is the divaricate branching, which is also strongly marked in the Epping Forest plants. —C. E. Britton.

Melampyrum pratense L., var. *concolor* Schönheit. Trottersclife, W. Kent, July 4, 1935. (Ref. No. 4189). Coll. A. Beadell. Comm. C. E. Britton. The var. *concolor* Schönh. was placed by Beauverd as a subvar. under var. *commutatum* Beck, of which it has the characteristic numerous intercalary leaves (3-5 pairs). The features that separate the two are rather indefinite, but var. *commutatum* appears less robust than var. *concolor*, and with a more lengthened calyx.—C. E. Britton.

Melampyrum pratense L., var. *digitatum* Schur. Shoreham, W. Kent, v.-c. 16, July 26, 1935. (Ref. No. 4209). I owe the knowledge of this locality to Mr A. Beadell. On visiting the locality the plant distributed was found to be the only form of *M. pratense* of that neighbourhood. The leaves are rather broad, and I suspect that this form is the var. *latifolia* recorded from Shoreham by Marshall in the *Flora of Kent*. As will be seen, var. *digitatum* is a robust form, especially notable, after the fall of the corollas, for the numerous (10-12) contiguous pairs of spreading deeply palmatifid bracts that give a bristling aspect to the upper parts of the stem and branches.—C. E. Britton.

Melampyrum pratense L., var. *lanceolatum* Spenn. Keston, W. Kent, July 29, 1935. Coll. A. Beadell. Comm. C. E. Britton. This has rather broad leaves and so approaches sub-var. *laurifolium*, which, however, is of laxer habit.—C. E. Britton.

×*Mentha nemorosa* Willd. (*rotundifolia* × *longifolia*). Hedgerow at Kilburn Oldstead, above Byland, Yorkshire. At present there is considerable confusion among mints named as *Mentha longifolia*, var. *nemorosa*, or as ×*M. niliaca*, var. *nemorosa*. I have purposely avoided the name *niliaca* as the true *M. niliaca* Jacq. seems to have no relation to the British plants of the *rotundifolia* × *longifolia* group. But the important question is whether *nemorosa* is a hybrid or not. My observations suggest that some of them are undoubtedly hybrids while others are forms or varieties of *M. longifolia* Huds., with no apparent *rotundifolia* strain in them. If this is correct, the existing nomenclature does not distinguish them very well. Those botanists who have found hybrids have rightly named them × *nemorosa* (= *niliaca*, var. *nemorosa*), while others have found forms of *longifolia* and have labelled them as such. In other words, there are two different groups of plants, considered at the moment to be one, and all called hybrid by some people and variety by others. The specimens distributed have been named as a hybrid form, since at present that is their usual designation, but they are examples of what I suggest should be called *M. longifolia*, var. *nemorosa*. The leaves are broad for what we know as typieal *M. longifolia* Huds., and the spikes are mostly short. Near the locality, in a ditch, I found more plants of a much more luxuriant nature, which may, I think, have been different states of the individuals distributed. The spikes were far longer and more like those of *M. longifolia* Huds. The leaves, however, were still broad, and not correct for that plant, hence the var. *nemorosa* Willd. is suggested.—Rex Knowling. "But the epithet *nemorosa* cannot be retained for both the hybrid *and* the variety."—Wilmott. "The branched hairs on the stem of this Mint indicate a hybrid of *M. rotundifolia*. Topitz calls this cross ×*M. villosa* Huds. and drops ×*M. niliaca* (Jacq.) Briq. I think this Mint is nearest to ×*M. villosa* Huds., f. *Willdenowii* (D.D.) Briq. Under this form Topitz includes *M. niliaca* (Jacq.), var. *niliaca* Briq., and *M. nemorosa*, var. *nemorosa* Wirtg., as well as other named forms. It is certainly not *M. nemorosa* Willd. This form has not retieulate leaves, and those are not so gradually tapered to both ends as in Mr Knowling's Mint."—Still.

×*Mentha verticillata* L. (*aquatica* × *arvensis*). By the side of Esthwaite Water. Judging by the bases of the leaves this gathering seems to fall rather between ×*M. verticillata* L. and what is usually called the var. *rivalis* Briquet (=×*M. verticillata* Huds.). I must apologise for rather scrappy speeimens.—Rex Knowling. "I think this is a form of var. *paludosa* (Sole), somewhat like var. *Jahniana* Top. See Topitz, Menthen flora v. Mittel Europa, *Bot. Centralblatt*, 1913."—Still.

×*Mentha sativa* L. Litton Upper Reservoir, near Chewton Mendip, N. Somerset, August 22, 1935. (Ref. No. 2240).—H. S. Thompson. "I should say var. *paludosa* Sole."—Still.

Mentha rubra Smith. Litton Upper Reservoir, near Chewton Mendip, N. Somerset, August 12 and 22, 1935. Specimens were taken from three large colonies.—H. S. Thompson. "These plants agree fairly well with Fraser's description of var. *raripila* Briq. The only character I can see to justify the variety is the ovate shape of the floral leaves. The hairiness, more or less, is, I feel sure, a function of moisture. It is difficult, if not impossible, to distinguish *laevifolia* from *raripila* in the case of dry-grown plants. In rich wet mud the bracts come to their proper development and then the difference, for what it is worth, can be seen."—Still. "The usual form of this Mint so often called var. *raripila* Briq. Some of the leaves are remarkably narrow and long—like those of *M. piperita* L. It is usual to denote this Mint as a hybrid."—Knowling.

Mentha arvensis L. Among cabbages in field, Chyverton, West Cornwall, September 4, 1935.—F. Rilstone. "*M. arvensis* L., var. *foliicoma* (Op.) Top., f. *diffusa* (Lej.) Top."—Still. "Yes, variety *densifoliata* Briq."—Knowling.

Mentha arvensis L. Derelict garden plot, Callestick, West Cornwall, August 31, 1935.—F. Rilstone. "Certainly a *Mentha arvensis* L. form."—Knowling. "*M. arvensis* L., var. *foliicoma* (Op.) Top."—Still.

× *Mentha Nouletiana* Timbal-Lagrave (*longifolia* × *spicata*). Roadside near Kendal. I am not quite clear whether Mr Fraser considered the parentage of this Mint, as he gave it in his *Menthae Britannicae*, to be really correct. Although he therein described it as *longifolia* × *spicata* he told me on one occasion that it should be *longifolia* × *rotundifolia*. I have heard it suggested as a variety of *M. longifolia* Huds. The appearance of the plant—apparently very constant in different localities—supports each of these three views. I do not know if the plant has been produced by artificial crossing. Constancy of characters is not usual, however, for hybrids of the *longifolia* × *rotundifolia* group—with the exception of × (?) *M. Alopecuroides* Hull, which is normally placed in the group.—Rex Knowling. "Topitz (*Bot. Centralblatt*, 1913) considers *M. Nouletiana* Timb.-Lag. as a form of *M. nemorosa* Willd., i.e., as a hybrid of *M. longifolia* × *rotundifolia*. These plants from Kendal are not ×*M. Nouletiana*. They seem to me to be the same as occurs in Nutfield Marsh. I have recently sent this to Trautmann, who calls it *M. excelentiformis* Hm., but I know nothing more of this ? species."—Still.

Mentha spicata L., var. *lacerata* (Opiz) Fraser. Cultivated at Wallington, Surrey, by A. L. Still. Origin, Oxford Botanic Gardens, August

1395. Comm. E. C. Wallace. "Topitz identifies this with var. *crispata* Schrader."—Still.

Mentha piperita L. Ditch in lane at Ewhurst, Surrey, September 22, 1935.—E. C. Wallace. "Yes, var. *officinalis* Sole."—Still.

Mentha amaurophylla Timb., var. *rugosa* Rouy, f. *purpurea* (*M. rotundifolia* × *spicata*). Cultivated examples of the Mint from Grafham, Surrey, distributed last year, August 1935. Comm. E. C. Wallace. "The term f. *purpurea* is due to an error and should be deleted. Trautmann (*in lit.*) identifies this as *M. viridis* L., var. *cordifolia* (Opiz). The specimens he saw were scraps. While this kind comes under the general group-name of *M. cordifolia*, it is quite different from any of the forms hitherto collected in this country; all are hybrids of *M. spicata* × *rotundifolia*."—Still.

Nepeta Cataria L. Roadside banks between Bristol and Bath, N. Somerset, July 21, 1935. It was full of aphis, which may partly account for the white blotches on the leaves.—H. S. Thompson.

Lamium maculatum L. Gargrave, W. Yorks, May 11, 1935.—H. Foster.

Ballota nigra L., var. *ruderalis* Koch. Roadside bank near top of Ursleigh Hill, above Pensford, N. Somerset, v.-c. 6, July 24 and 31, 1935. See Koch *Synopsis*, ed. 2 (1844), vol. ii, 656. Calycis dentes ovati, in aristan dente longiorem terminati: *B. ruderalis* Fries Fl. Hall., p. 101, nov. ed. 2, p. 194. Apart from the form of the calyx teeth, this colony was an attractive clean-cut form, with often red and distant lower leaves. Eight sheets of the ± normal type of *B. nigra* from roadside between Bristol and Bath are also sent for comparison.—H. S. Thompson. "Correct."—Wilmott.

Plantago lanceolata L., var. *anthoviridis* Watson. Perranzabuloe, West Cornwall, July 1, 1935. Flower heads of two forms of the variety and of the typical plant. The two forms of the variety are:—(1) Anthers on very short filaments with, apparently, no perfect pollen. (2) Anthers on rather longer filaments with a percentage of well-developed pollen grains. See *Journ. Bot.*, 1935, p. 234.—F. Rilstone.

Corrigiola littoralis L. Slapton, S. Devon, v.-c. 3, September 20, 1935. Very abundant this year; most at Torcross, but all along the lake-side to the Slapton Hotel. It flowered late, as earlier in the year its habitat was inundated. Legit T. Stephenson. Comm. W. H. Pearsall.

Atriplex maritima E. Hallier. All from one large prostrate plant on the west shore of Thorney Island, W. Sussex, v.-c. 13, August 11, 1935.—E. C. Wallace. "Yes, the plant is abundant on some parts of the

Sussex coast, but the name should be *A. sabulosa* Rouy, since Hallier's is an illegitimate homonym of *A. maritima* (L.) Crantz (1766: Inst. I. 208 = *Suaeda maritima* (L.) Dum.)."—WILMOTT.

Polygonum amphibium L., var. *glandulosum* Schönheit. Cultivated land near Lamlash, Isle of Arran, v.-c. 100, August 1935. Leaves of plants very soft and with a "sticky" feel when gathered. Leg. R. MACKECHNIE. Comm. E. C. WALLACE.

Euphorbia virgata W. & K. Hedgerow between Woodstock and Stonesfield, Oxon, August 15, 1935.—J. CHAPPLE. "This is not typical Hungarian *E. virgata* W. & K., but is the plant called by Thellung *E. virgata*, forma *esulifolia*."—WILMOTT.

Salix nigricans Sm. Birkdale, Lancs, April 23, 1935.—H. FOSTER. "No! This is ×*S. rubra* (Huds.), var. *Forbyana* (Sm.), a plant of hybrid origin between *S. purpurea* and *S. viminalis*. I have not been able to discover the correct authors of the combinations concerned."—WILMOTT.

Salix repens L., var. ? On dry sand, Birkdale, Lancs, April 23, 1935. On wet sand, Birkdale, Lancs, April 23, 1935.—H. FOSTER. "Incomplete specimens like these last two should not be sent in until supplementary gatherings with foliage have been made."—WILMOTT and ED.

Potamogeton gramineus × *natans* = *P. sparganifolius* Laest. Bealanabrack River, Maam, W. Galway, August 9, 1935. (Ref. No. 17).—W. A. SLEDGE. "Most carefully prepared examples and therefore very acceptable. There has been much divergence and change of opinion among British botanists as to the status of this hybrid. It is the *P. Kirkii* Syme of Fryer's *Pot. Brit. Isles*, 1915, 16, although the description there given of the submerged leaves as being 1¼ in. wide is seriously inaccurate. The leaf-width is very rarely more than 5-6 mm. Babington correctly considered *P. Kirkii* to agree absolutely with the *P. sparganifolius* of Laestadius, but Syme, Fryer, and Bennett dissented from this view (*Journ. Bot.*, 1919, 11). The *Lond. Cat.* (ed. 7) first gave it as *P. polygonifolius*, c. *Kirkii*, subsequently as *P. Kirkii* Syme, and finally (ed. 11) in 1925, as *P. heterophyllus* Schreb. × *natans* (*sparganifolius* Laest.). Dr Sledge's fine specimens are from the Irish *locus classicus*, which is one of the most southerly in the European distribution area of the hybrid. Dr Hagström kindly sent me examples from the north of Sweden and these are very different in aspect from the Irish plants, the leaves being longer, extremely narrow and much more pointed. Those from the south of Scandinavia are wider, and somewhat thicker in texture but otherwise identical. The original specimens were gathered by Laestadius at Karesuando, Lapland, in 1829 and subsequent years. He named them *P. tereticaule* and *P. lineare* and at first regarded them as being abnormal forms of *P. natans*, but later thought them *P. gramineus*. It was not until 1891 that Almquist showed them to be hybrids

of these two species—*P. gramineus* × *natans*—in *Bot. Notis.*, 127 (1891), and *Bot. Centralbl.*, xlvii, 296 (1891). This hybrid is very variable and the very narrow-leaved Lapland form is regarded as f. *typicus*. The Irish plants now before me are identical with a sheet of *P. Kirkii* Syme from the same station, collected by Dr G. C. Druce in September 1906, and distributed through the B.E.C. At the time this was considered to be ' possibly *polygonifolius* × *natans*.' Later, I submitted my sheet to Dr J. O. Hagström who returned it with the following appended note: ' The hybridity of this plant cannot be disputed. *P. natans* is very clear and obvious in it. *P. polygonifolius* is excluded on account of the structure of the submerged leaves and the form of their tips, whereas those facts point to *P. gramineus*. The plant is the beautiful hybrid *Pot. gramineus* L. × *natans* L. (*P. sparganifolius* Laest.). If you wish for a name distinguishing it from all the other forms of *P. sparganifolius* you may call it f. *Kirkii* (Syme) Hagstr.' As the Irish plant is so distinct, I suggest that in future we adopt this name. In the *Comital Flora* only Galway (16) is given for this hybrid but in my herbarium is a specimen from ' R. Inny above Loch Iron, Westmeath (23). R. L. Praeger, 3/7/99,' which is undoubtedly *P. sparganifolius* Laest.''—Pearsall.

×*P. perpygmaeus* Hagstr. (*P. coloratus* × *pusillus*). Cahir River, Co. Clare, August 10, 1935. (Ref. No. 18).—W. A. Sledge. "Beautiful examples of this very rare hybrid. I have compared this gathering with the original examples—B.E.C. 1922 Rep., 630 (1923)—now in Herb. Druce and in my own herbarium, and with specimens of *P. lanceolatus* Smith, var. *hibernicus* Ar. Benn., collected by P. O'Kelly at the same station in 1909 and subsequently (July 22, 1921) determined by Dr J. O. Hagström as ×*P. perpygmaeus*. Dr Sledge's plants—Ref. No. 18—agree perfectly with both. The slight differences apparent are due entirely to the date of collection, O'Kelly, July; Dr Sledge, August; and Dr Druce, September—the last being the most developed. Other references to the plant's previous history will be found in B.E.C. 1930 Rep., 388 (1931). As no detailed description of *P. perpygmaeus* is available the following may be of value. Stem rigid, ± angular when dried, c. 0.75 mm. wide, rarely simple, usually much branched with internodes shorter than the leaves above but longer below. As in *P. coloratus* there is no clear distinction between the floating and submerged leaves, as such—none are coriaceous. There is, however, a marked difference in form, texture and venation between two types of leaves, (a) the involucral leaves subtending the axillary peduncles, and (b) the normal cauline leaves. The former (a) are opposite, with lamina elliptical, relatively shorter and broader (to 3 cm. × 1 cm.), normally petiolate, somewhat darker in colour, slightly thicker in texture, with the fine delicate reticulate venation of *P. coloratus*. The latter (b) are usually alternate, narrowly lanceolate (to 7 cm. × 4 mm.), sessile, widest above the middle and tapering to each end; midrib very strong, dark and broad, bordered by 2-3 rows of very conspicuous lacunae on either side,

the row nearest to the midrib having very long and wide areolations. Normally there are 3 lateral nerves on either side the midrib and frequently in the upper leaves the entire space between the midrib and the nearest lateral nerve is covered with a network of lacunae. Often also in the lower part of some of the leaves there is a broad central band of such occupying one-third of the entire leaf surface. The margins of all leaves are quite entire. The stipules are open and convolute, up to 15 mm. in length and 2.5 mm. wide at the rounded apex. They are extremely thin in texture, transparent, many-veined with the whole surface delicately reticulate—fine microscopic objects. The flowering spikes are numerous, terminal and axillary, arranged as in *P. pusillus* but not as in *P. panormitanus*. The peduncles are 2.5 cm.-5.0 cm. in length, the longest often near the base of the stem and subtended by the widest leaves on the plant. The spikes are oblong, very short (c. 5.0 × 3.0 mm.) and always barren. Neither of the 2 parent species readily hybridises nor are they usually found in proximity, but as '*P. coloratus* is more abundant in the Brit. Isles than in the rest of Europe' (Fryer, *Pots. Brit. Isles*, 24-25), it is in Ireland or the East Anglian Fens that this hybrid is most likely to be found. So far as I can ascertain, no other European station for it has been recorded."—PEARSALL.

Potamogeton lanceolatus Smith. In dense patches in the bed of a narrow brook (the river Lligwy) on Rhos Lligwy, a quarter of a mile south of the National School, N.E. Anglesey, v.-c. 52, September 23, 1881. Collected by CHARLES BAILEY. Comm. J. CHAPPLE. "*P. alpinus* Balb. × *pusillus* L. (×*P. lanceolatus* Smith). Very fine examples of this. There is ample evidence throughout for both the parent species, but the habit is that of *P. pusillus* and the involucral leaves show the greater influence of *P. alpinus*."—PEARSALL.

×*Potamogeton nitens* Weber, var. *subgramineus* (Raunk.) Hagstr., f. *involutus* Fryer. Blackbush Drain, Whittlesea, Cambs, July 25, 1935. Coll. A. FRYER. Comm. J. CHAPPLE. "The sheet sent me happens to be the best example of the var. *subgramineus* I've seen. The primary and secondary involucral leaves are very beautifully developed, and the lower stem leaves well displayed. The correct citation of the particular form should be f. *involutus* (Fryer) Hagstr."—PEARSALL.

Potamogeton obtusifolius M. & K. Muckross, Co. Kerry, v.-c. H.2, September 1922. Coll. G. C. Druce. Comm. J. CHAPPLE. "Yes."—PEARSALL.

Zannichellia palustris L. Eye, Northants, November 1909. Coll. G. C. DRUCE. "Yes."—PEARSALL.

Zannichellia pedicellata Fries. Marcham, Berks, August 1910. Coll. G. C. DRUCE. Comm. J. CHAPPLE. "Yes."—PEARSALL.

Zannichellia pedicellata Fries, var. *gibberosa* (Reichb.). Wyke, Chichester, W. Sussex, v.-c. 13, July 1917. Coll. G. C. Druce. Comm. J. Chapple. "My sheet is plentifully supplied with mature fruits but the great majority of them show practically smooth ventral margins although the dorsal margins are all very cristate—*not* the variety, I should say." —Pearsall. "I agree; not the variety."—Wilmott.

Carex atrata L. Ben Lawers, Perthshire, August 8, 1934.—E. S. Edees. "No: it is *C. saxatilis* L."—Chapple, Pearsall, Wilmott.

Carex montana L. Early plants showing root development. Mendip plateau, near Charterhouse, N. Somerset (800 feet), May 3, 1935. A feature of the vegetation on scores of acres.—H. S. Thompson.

Carex aquatilis Wahl. Teifi Marshes, Tregaron, Cardigan, v.-c. 46, June 25, 1935.—P. M. Hall and W. A. Sledge. "Yes."—Nelmes.

Carex ——. Bog near the head of the Kilrannoch burn, Angus, v.-c. 90, alt. c. 2750, July 16, 1935. (Ref. No. 4/16). This plant appears to me to be a hybrid into which *C. Goodenowii* or *C. aquatilis* enter.—R. Mackechnie and E. C. Wallace. "A mixture. Three specimens with narrow involute leaves, dark and obtuse glumes, and nerved utricles I should place under *C. Goodenowii* Gay, or rather a variety of that species, as the glumes are longer than the utricles. The fourth specimen has a very different male spike, the glumes of which are pale and narrow as in *C. aquatilis*. It also has the broader, flat leaves, the nerveless utricles and the typical hyaline apex to the female glumes of *C. aquatilis*. These female glumes, however, are darker and longer than in typical *C. aquatilis* and spikes more approximate and less blunt."—Nelmes.

Carex extensa Good. Par, Cornwall, August 1935.—E. S. Edees. "A robust form with some of the lowest spikes compound."—Nelmes.

Carex Lachenalii Schkuhr. Grassy slopes on Lochnagar at c. 1100 m. above Loch nan Eun, S. Aberdeen, v.-c. 92, July 14, 1935.—H. W. Pugsley, R. Mackechnie, and E. C. Wallace.

Carex Lachenalii Schkuhr. Bare rocky ground near snow, above Loch Etchachan, Ben Macdhui, S. Aberdeen, v.-c. 92, July 11, 1935. Abundant over a small area and showing its tufted habit of growth very well in contrast with the Lochnagar plant, which grows amongst grass and does not form such large tufts.—R. Mackechnie and E. C. Wallace.

Carex ornithopoda Willd. High Fell, Miller's Dale, and Cressbrook Dale, Derbyshire, v.-c. 57, May 18, 1935.—E. C. Wallace.

Phalaris canariensis L. Waste ground, Old Swindon, N. Wilts, v.-c. 7, July 18, 1935. (Ref. No. 1251).—J. D. Grose.

Phalaris paradoxa L. Waste land, Newport, Isle of Wight, July 1935. I have no description of the var. *praemorsa* Coss & Dur. distributed by me in 1930. This year's plant, however, seems different, and I have not so named it.—J. W. Long. "Correct."—Hubbard.

Anthoxanthum Puelii Lec. et Lam. Chobham, Surrey, June 27, 1935. (Ref. No. 4183). Coll. C. E. Britton. "Correct."—Hubbard.

Phleum pratense L., ? var. *intermedium* Jord. Port Meadow, Oxford, August 2, 1935. These specimens seem to approach this variety, having long spikes (up to 13 cm. long), stems swollen at the base, but in this character they are not nearly so extreme as the specimens from Nuffield and Salisbury distributed by Druce and Goddard in 1919. See *Rep. B.E.C.*, 1917, p. 255.—J. Chapple. "This appears to be a robust form of *Phleum nodosum* L. *P. nodosum* L. differs from *P. pratense* L. by its smaller size, narrower and shorter leaf-blades, more slender and usually shorter spikes, smaller spikelets and shorter awns. Gregor and Sansome have shown that *P. pratense* L. (*sensu lato*) comprises two distinct groups, one group being diploid and corresponding to the species described as *Phleum nodosum* L. and the other group hexaploid and corresponding to *Phleum pratense* L. ("Timothy"). In a recent part of *Herbage Reviews* (iv, p. 33, 1936), it is stated that Gregor and Sansome have succeeded in producing a synthetic Timothy type (with 42 chromosomes) by crossing the diploid *P. nodosum* (with 14 chromosomes) with the tetraploid *P. alpinum* (with 28 chromosomes), and that this hybrid agrees essentially with ordinary Timothy (*P. pratense*), in which the somatic chromosome number is also 42."—Hubbard.

Agrostis alba L. Small pasture form, Perranzabuloe, West Cornwall, July 12, 1935.—F. Rilstone. "*Agrostis stolonifera* (L.), var. *stolonifera* Koch."—Philipson.

Agrostis alba L. Robust form from dry roadside, Perranzabuloe, West Cornwall, July 14, 1935.—F. Rilstone. "*Agrostis stolonifera* (L.), var. *palustris* (Huds.) Farw. This plant is distinguished from *A. gigantea* Roth (=*A. nigra* With.) by the absence of rhizomes."—Philipson.

Agrostis canina L. Oak wood, Lambourne, West Cornwall, July 26, 1935.—F. Rilstone. "A shade form of *Agrostis canina* L."—Philipson.

Aira praecox L. Dry sandy roadside, St Agnes, West Cornwall, June 22, 1935.—F. Rilstone.

Cynosurus echinatus L. Rail sidings at Llantrissant, Glamorgan, v.-c. 41, June 18, 1935. Leg. A. L. Still. Comm. E. C. Wallace.

Poa annua L., tall form with anthers 8 mm. long. Shaded roadside, Callestick, West Cornwall, June 1935.—F. Rilstone.

Bromus erectus Huds. Bank, Marshfield, Mon., v.-c. 35, June 1935. Coll. A. E. Wade. Comm. Department of Botany, National Museum of Wales. "Correct."—Hubbard.

Bromus lepidus O. R. Holmberg (=*B. britannicus* I. A. Williams). Between Weymouth and Portland, Dorset, June 14, 1933. It appears that the grass described by myself as *Bromus britannicus* in *Journ. Bot.*, 1929, p. 65, is the same as that named *B. lepidus* by O. R. Holmberg in *Bot. Notiser*, 1924. See W. T. Stearn and J. S. L. Gilmour in Notes from Univ. Herb. Cambr., *Journ. Bot.*, 1932 (Suppl., p. 3). Mr T. J. Tutin has stated (*Journ. Bot.*, 1935, p. 235) that *B. lepidus* "seems always, or nearly always, to occur in fields sown with *Lolium italicum*." This does not entirely agree with my own observation. The present specimens were from rough roadside ground which has never, I imagine, been deliberately sown with *Lolium* or anything else. The *Bromus* is extremely partial to sandy cultivated fields, many of which, no doubt, have been sown at some time with *Lolium*; but I should not regard the suggestion that *B. lepidus* has always been introduced with Italian rye-grass seed as being anywhere near proved. This *Bromus* persists year after year in certain fields, e.g., in the neighbourhood of Thursley, Surrey.—I. A. Williams. "Correct."—Hubbard.

Bromus maximus Desf. In great abundance for half-a-mile along the road between Portchester and Fareham, South Hants, v.-c. 11, July 12, 1935. (Ref. No. 1335).—P. M. Hall. "The name *Bromus maximus* Desf. (1798) is invalidated by the earlier *B. maximus* Gilib. (1792), whilst in addition the species figured and described by Desfontaines has an erect contracted panicle and was originally described as *Bromus rigidus* Roth. The correct name for Mr Hall's plant is *Bromus Gussonei* Parl., or for those who prefer to treat it as a variety of *B. rigidus*—*B. rigidus*, var. *Gussonei* Coss. et Dur."—Hubbard.

Bromus madritensis L. Border of Durdham Down, Clifton, W. Gloster, v.-c. 34, July 2, 1935. In extreme abundance this year.—H. S. Thompson.

Lolium temulentum L. Waste land, Newport, Isle of Wight, July 1935.—J. W. Long. "Correct."—Hubbard.

Dryopteris dilatata (Hoffm.) A. Gray. Marshy thicket, Ramsbury, N. Wilts, v.-c. 7, November 6, 1935. (Ref. No. 1443). Some plants have only one or two bi-coloured scales.—J. D. Grose. "This is the species commonly called *Dryopteris dilatata* (Hoffm.) A. Gray, but Schinz and Thellung, *Vierteljahrschrift der Naturforschenden Gesellschaft in Zürich*, lx, p. 339 (1915), have adopted the name *D. austriaca* (Jacq.) Woynar, and Druce in his List adopts *D. aristata* (Vill.) Druce, which is antedated by *D. aristata* (Forst.) O. Ktze. Woynar's name was based on *Polypodium austriacum* Jacq., and there are specimens in the British Museum Herbarium from Jacquin belonging to this species, but they

are labelled *Polypodium cristatum*. There is no specimen in Vienna. It does not agree well with Jacquin's description, and it is desirable that some one should revisit the original locality given by Jacquin as 'Habitat in sylvis subalpinis Etscheri,' i.e., Ötschers in Nieder-Österreich, and collect all the ferns there before the name is definitely adopted instead of *D. dilatata*. Woynar, in Österreichische Botanische Zeitschrift, lxvii, p. 274 (1918), states that Jacquin sent a specimen of his plant to Linnaeus, who identified it as *Polypodium* (i.e., *Athyrium*) *Filix-foemina*. A hybrid with *D. spinulosa* (Müll.) Watt has been recorded by Rosendahl, *Svensk Farm. Tidskr.*, 1911, No. 5, p. 3, from Sweden: it should be searched for in this country. British botanists should note that *Dryopteris*, not *Lastrea*, is the valid name for this genus, in the broad sense, but it is possible that it should be subdivided into several genera. The name *Dryopteris* has been proposed for addition to the list of *nomina conservanda* of the International Rules of Botanical Nomenclature. The genus is cosmopolitan and contains over 1200 species."—ALSTON.

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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1936

WITH BALANCE-SHEET AT 31st DECEMBER 1936

BY THE

HONORARY SECRETARY

JOHN E. G. CHAPPLE,

FARADAY LODGE, DAVID ROAD, OXFORD.

AND THE

HONORARY EDITOR

PATRICK M. HALL,

12 HIGH STREET, FARNHAM, HANTS.

VOL. XI. PART III.

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1937.

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. XI. PART III).

Victoria Regina.

Floreat flora.

REPORT FOR 1936

BY THE

HONORARY SECRETARY,

JOHN F. G. CHAPPLE,

YARDLEY LODGE, CRICK ROAD, OXFORD,

AND THE

HONORARY EDITOR,

PATRICK M. HALL,

12 HIGH STREET, FAREHAM, HANTS.

The Ordinary Member's Subscription of 10/- per annum (or Exchange Member's 20/-) became due on 1st January 1937, and should be paid to the Honorary Secretary.

Exchange Club Parcels for 1937 should be sent, post paid, on or before 1st December 1937, to the HONORARY SECRETARY, who will act as Distributor and Editor of the Distributor's Report (Vol. XI, Part VI).

PRICE 10s.

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AUGUST 1937.

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THE BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

OFFICERS FOR 1937-38.

ELECTED AT THE ANNUAL GENERAL MEETING, MARCH 17TH, 1937.

Chairman—The Rt. Hon. H. T. Baker, P.C.
Vice-Chairman—Mr J. Ramsbottom, O.B.E., M.A., F.L.S.
Hon. Secretary—Mr John F. G. Chapple.
Hon. Treasurer—Mr Francis Druce, M.A., F.L.S.
Hon. Editor—Mr Patrick M. Hall, M.C., F.L.S.

COMMITTEE.

To retire March, 1938.
Hon. Mrs G. Baring.
Mr A. E. Wade, F.L.S.
Mrs Wedgwood.
Mr A. J. Wilmott, M.A., F.L.S.

To retire March, 1939.
Dr R. W. Butcher, B.Sc., Ph.D., F.L.S.
Mr J. S. L. Gilmour, M.A., F.L.S.
Mr E. Milne-Redhead, B.A.
Miss E. Vachell, F.L.S.

To retire March, 1940.
Mr J. E. Lousley.
Mr N. Y. Sandwith, M.A., F.L.S.
Mr N. D. Simpson, M.A., F.L.S.
Mr A. L. Still, B.A.

To retire March, 1941.
Mr A. H. G. Alston, M.A., F.L.S.
Mr C. E. Britton.
Mr H. W. Pugsley, B.A., F.L.S.
Lt.-Col. A. H. Wolley-Dod.

Co-opted Member—Mr R. H. Corstorphine, B.Sc., F.L.S.

SUB-COMMITTEES.

Editorial Sub-Committee.
Mr R. H. Corstorphine.
Mr N. Y. Sandwith.
Mr A. J. Wilmott.
The Hon. Editor.

Excursions and Field-work Sub-Committee.
Dr R. W. Butcher.
Miss E. Vachell.
The Hon. Secretary.

Rules Sub-Committee.
The Editorial Sub-Committee with the addition of Mr Francis Druce.

NEW MEMBERS (UP TO MAY 1, 1937).

Barnes, Egbert C., Hungerdown, Seagry, Wilts. (1937.)
Birchall, Miss Violet E. D., Saintbridge House, Gloucester.
Cadbury, Miss Dorothy A., 40 Edgbaston Park Road, Edgbaston, Birmingham.
Cole, Mrs Edward B., South Hamilton, Massachusetts, U.S.A.
Crawshaw, Lady, Whatton, Loughborough, Leicestershire.
Crisp, W. C., School House, Stewkley, Leighton Buzzard, Beds.
Day, Miss E., Flint House, Sandwich, Kent. (1937.)
Dent, G., 2 Park Cottages, Limpsfield, Surrey.
Dony, J. G., B.Sc. (Econ.), 41 Chobham Street, Luton, Beds. (1937.)
†Fraser, G. T., 71 Fore Street, King's Kerswell, Newton Abbot, Devon. (1937.)
Gambier-Parry, Mrs B., Duntisbourne Rouse, Cirencester, Gloster. (1937.)
Graham, Prof. R. J. D., M.A., D.Sc., F.R.S.E., Botany Dept., The University, St Andrews.
Hardinge, The Hon. Lady, St James's Palace, S.W.1.
Hughes, J. S., M.A., The University Observatory, Oxford. (1937.)
Jowett, Miss E. B., Oreton Mount, Grange-over-Sands. (1937.)
*Lang, Mrs D. K., Wyse Hill, Finchampstead, Berks.
Loyd, Lady Moyra, Langleybury, King's Langley, Herts. (1937.)
Mills, J. N., 20 Westfield Road, Birmingham, 15. (1937.)
Milvain, Mrs, Green Close, Snowshill, near Broadway, Worcester. (1937.)
Payn, Lt.-Col. W. A., The Gables, Osborne Road, Andover, Hants.
†Phillips, E. Masson, 26 Cheltenham Place, Plymouth, Devon. (1937.)
Sowter, F. A., Ashstead, North Avenue, Leicester. (Rejoined 1937.)
Verey, Mrs Cecil, Buckland Rectory, Broadway, Worcester.
Waldy, The Hon. Mrs, Eldon House, Heighington, Durham. (1937.)
Webster, Miss M. McCallum, Cromlet Hill, Old Meldrum, Aberdeenshire.
Williams, Mrs Frances R., 234 Highland Avenue, Winchester, Mass., U.S.A.

CORRECTIONS IN THE LIST OF MEMBERS AND CHANGES OF ADDRESS AND TITLE.

Aellen, Dr Paul, Oberwilerstrasse 126, Basle, Switzerland.
Amherst, C., Lynton Cottage Hotel, Lynton, N. Devon.
Anderson, Sir W. M. Abbot-, C.V.O., Madeira Cottage, The Walk, Lyme Regis, Dorset.
Ashby, Mrs R. C., Woodlands, West End, Southampton.
Baker, F. T., Curator, City and County Museum, Lincoln.
Barnes, Mrs E. C., Hungerdown, Seagry, Wilts.

Blythe-Martin, Rev. W. H., M.A., St Mary's Vicarage, Tyne Dock, Co. Durham.
Brenan, J. P. M., Cape Cottage, Toubridge, Kent.
Graham, Mrs H., 40 Orchard Court, Portman Square, W.1.
Graveson, W., Selborne, Queen's Hill, Hertford.
Grove, Mrs, Eccles Hall, Norwich.
Haines, J. W., Midhurst, Hucclecote, Gloucestershire.
Hall, Miss M., 1 Broad Walk, Weobley, Herefordshire.
Hartley, J. W., Vallona, London Road, Prestbury, Cheshire.
Haynes, Gerald, 8 Canterbury Road, Oxford.
Heron, Miss M., Erclands, Ercall Lane, Wellington, Salop.
Hill, S. A., 79 John Street, West Bromwich.
Johnston, Colonel H. H., C.B., C.B.E., D.Sc., etc., c/o Miss Charleson, Ratho Lodge, Ratho, Midlothian.
Massy, Miss N. C., The Close, Marley Common, Haslemere, Surrey.
Melville, Dr R., Royal Botanic Gardens, Kew, Surrey.
New York Botanical Garden, Bronx Park, New York, U.S.A.
Norton, F., Westward House, 3 Pencisely Rise, Cardiff.
Orme, Mrs R., Rolle Hotel, Budleigh Salterton, S. Devon.
Peel, Colonel The Hon. Sir Sidney, C.B., D.S.O., 26 Hill Street, W.1.
Phillips, Hugh, 16 Sollershott Hall, Letchworth, Herts.
Riddelsdell, Rev. H. J., M.A., A.L.S., 4 Wolverley House, Goring, Reading, Berks.
Rilstone, F., Lambourne Hill, Penhallow, Truro, Cornwall.
Severn, Lady, Winterbrook Lodge, Wallingford, Berks.
Sherrin, W. R., South London Botanical Institute, 323 Norwood Road, S.E.24.
Sledge, Dr W. A., 27 Weetwood Lane, Far Headingley, Leeds, 6.
Stuart, Mrs C. U., 120 London Road, Worcester.
Swaine, Miss A. K., Pisang Cottage, Nailsea, Somerset.
Temperley, G. W., Restharrow, Apperley Road, Stocksfield-on-Tyne.
Worsdell, W. C., 60 Church Road, Richmond, Surrey.

THE RULES OF THE SOCIETY,

AS ALTERED AND ADOPTED BY THE ANNUAL GENERAL MEETING OF MARCH 17TH, 1937.

1. NAME.
The name of the Society shall be the Botanical Society and Exchange Club of the British Isles.

2. OBJECTS.
The objects of the Society are:—
   i. To encourage the study of the Flowering Plants and Vascular Cryptogams of the British Isles.
   ii. To facilitate intercourse between British Botanists for the exchange both of ideas and of dried material of critical species.
   iii. To aid in the maintenance of adequate representative collections of British Plants in the Public and National Herbaria.
   iv. To support the aims of the Wild Plant Conservation Board for the protection of the British Flora.
   v. To organise botanical excursions.

3. OFFICERS OF THE SOCIETY.
   (a) The management of the affairs of the Society shall be in the hands of a Committee.
   (b) The Committee shall consist of the Chairman, Vice-Chairman, Honorary Secretary, Honorary Treasurer, Editor, and sixteen elected members.
   (c) The Chairman, Vice-Chairman, Honorary Secretary, Honorary Treasurer, and Editor shall be elected annually at the Annual General Meeting, and shall be eligible for re-election.
   (d) The elected members of the Committee shall be elected at the Annual General Meeting; four of the elected members shall retire every year by rotation in order of seniority in length of membership of Committee, and shall not be eligible for re-election until the expiration of a year.
   (e) All nominations for the four annual vacancies on the Committee shall be in writing, signed by two members of the Society, and shall be accompanied by the written consent of the candidate to serve if elected, and shall be sent to the Honorary Secretary before February 1st in each year.
   (f) Other vacancies on the Committee may be filled at the Annual General Meeting or at a Special Meeting called for the purpose, on nominations made at the Meeting.

4. MEMBERSHIP.
   (a) Membership of the Society is open to all botanists upon payment of ten shillings, which shall entitle them to the privileges of membership until the 31st day of December of the current year.

(b) Candidates for membership shall obtain from the Honorary Secretary a copy of the Rules of the Society and sign a Form of Declaration of their willingness to support the objects of the Society and to accept the responsibilities and privileges of membership.

5. HONORARY AND CORRESPONDING MEMBERS.
Distinguished Foreign Botanists, who are not members of the Society, may be elected Honorary Members on the recommendation of the Committee at the Annual General Meeting. Distinguished British Botanists may, in the same way, be elected Corresponding Members. Such Honorary and Corresponding Members shall enjoy all the privileges of membership.

6. ANNUAL SUBSCRIPTIONS.
(a) Annual subscriptions shall be Ten Shillings for ordinary members and £1 for exchange members.
(b) Annual subscriptions are payable upon the first day of January in each year.
(c) Notice shall be given to every member of his subscription being due.
(d) Any member whose subscription shall be in arrear for two years on the first day of January in any year shall cease to be a member.

7. LIFE MEMBERSHIP.
Life membership may be compounded in one payment of £7 in the case of ordinary members and £12 in the case of exchange members.

8. PRIVILEGES OF MEMBERSHIP.
Each member of the Society shall enjoy the following privileges:—
(a) To receive one copy of the Society's Reports every year.
(b) To submit plants for naming to the Honorary Secretary (return postages on parcels being prepaid by the sender).
(c) To consult the Officers and Official Referees of the Society upon any question affecting British Botany.
(d) To submit papers and notes for inclusion in the Annual Report.
(e) To attend, and vote at, all meetings and excursions of the Society.

9. PRIVILEGES OF EXCHANGE MEMBERS.
In addition to all the privileges of ordinary members, exchange members shall also have the following privileges:—
(a) To receive two additional (i.e., 3 in all) copies of the Distributor's Report every year.
(b) To contribute parcels of dried plants and participate in the annual Exchange Distribution, which shall be conducted in accordance with such regulations as the Committee may from time to time direct.
(c) Copies of the Regulations of the Exchange Distribution may be obtained free of charge from the Honorary Secretary.

10. RESIGNATION.
Any member wishing to resign from his membership shall give written notice to the Honorary Secretary before the first day of December in any year of his intention to resign, failing which he shall be liable for the payment of his subscription for the ensuing year.

11. EXPULSION FROM MEMBERSHIP.
If it be proved at any time to the satisfaction of the Committee that any member has acted in any way contrary to the objects or derogatory to the interests of the Society, the Committee shall make a report on the matter to the next Annual or Special General Meeting; on a vote of not less than two-thirds of the members present at such meeting in favour of expulsion, the member concerned shall cease to be a member of the Society and shall forfeit all claim upon the Society; he may subsequently, however be reinstated, but only by ballot of the members present at an Annual General Meeting.

12. HONORARY SECRETARY.
The Honorary Secretary shall carry out all ordinary secretarial duties. He shall be responsible to the Committee and shall be entitled to such Honorarium for his services as may upon the recommendation of the Committee be voted at the Annual General Meeting or at a Special General Meeting called for the purpose.

13. EDITOR.
The Editor shall edit the annual Report in co-operation with the Editorial (Publications) Sub-Committee, which shall be appointed by the Committee. He shall be entitled to such Honorarium for his services as may upon the recommendation of the Committee be voted at the Annual General Meeting or at a Special General Meeting called for the purpose.

14. FINANCES OF THE SOCIETY.
(a) The Society's invested funds shall be held in the names of the Chairman and Honorary Treasurer for the time being. The Society's Banking Account shall be in the name of the Society and shall be operated by the Honorary Treasurer.
(b) The Committee shall have power to adopt such financial measures as may seem to them to be expedient in the interests of the Society.
(c) A member of the Society, to be appointed by the Committee, shall act as Honorary Auditor, and the annual accounts having been audited by him, shall be approved by the Committee before presentation to the Annual General Meeting.

15. CHAIRMANSHIP.
At all Committee and General Meetings the Chair shall be taken by the Chairman, or in his absence by the Vice-Chairman. In the absence of both, the Chair shall be taken by a member of Committee elected by the meeting.

16. MEETINGS OF THE COMMITTEE.

(a) The Honorary Secretary shall be authorised to call a meeting of the Committee upon the written request of the Chairman or of not fewer than three members of the Committee. The Honorary Secretary shall give each member not less than seven days notice of a proposed Meeting.

(b) A quorum at a meeting of the Committee shall consist of five members.

(c) The Committee shall have power to add to their numbers not more than four co-opted members, who shall be members of the Society. Such members shall serve until the following Annual General Meeting.

(d) The Committee may appoint from their own body with or without the addition of other members such Sub-Committees as they may determine and shall define all duties and powers of such Sub-Committees and the number of Members to form a quorum thereof, and may delegate any of their powers and duties to such Sub-Committees.

17. ANNUAL GENERAL MEETING.

(a) The Annual General Meeting shall be held in March in each year at such time and place as the Committee shall direct.

(b) A quorum shall consist of seven members.

(c) Voting shall be conducted by show of hands, but on the ruling of the Chairman, or on the demand of not fewer than five members present, voting shall be by ballot; but all elections to the Committee under Rule 3 (d) shall be by ballot.

18. SPECIAL GENERAL MEETINGS.

(a) The Honorary Secretary shall, by direction of the Committee, or at the written request of not fewer than seven members, call a Special General Meeting for the consideration of any business of interest to the Society.

(b) A quorum shall consist of seven members.

(c) Voting shall be conducted by show of hands, but on the Ruling of the Chairman, or on the demand of five members present, voting shall be by ballot, but all elections to the Committee under Rule 3 (f) shall be by ballot.

19. NOTICES OF MEETINGS AND EXCURSIONS.

Notice of the Annual and Special General Meetings, and the agenda of such meetings, shall be sent to every member by post at least fourteen days before the date of the meeting. The programme of excursions will be sent to all members with the notice of the Annual General Meeting.

20. CASTING VOTE OF CHAIRMAN.

When there is equality of votes at any Committee, Annual, or Special General Meeting, the Chairman shall have a second or casting vote.

21. ALTERATIONS OF RULES.
No rule shall be made or altered except at the Annual General Meeting or at a Special General Meeting called for the purpose, and then only after twenty-eight days notice has previously been given in writing to the Honorary Secretary, and he shall give fourteen days notice to all members of the Society of the proposed addition or alteration to the Rules.

22. PROCEEDINGS OF MEETINGS.
The proceedings of all General Meetings shall be recorded in the Society's Annual Report.

23. CITATION OF ANNUAL REPORT.
The title of the Annual Report shall be abbreviated for citation as follows:—B.E.C. 1932 Rep. 123 (1933), referring to p. 123 of the Report for 1932 published in 1933.

24. REFEREES.
The Committee shall prepare from time to time a list of Referees to whom it is recommended that critical groups of plants or special plants should be submitted for naming.

THE PROGRAMME OF EXCURSIONS

arranged for 1937 was sent out to all members with the notices of the Annual General Meeting.

NOTICE.

THE 1937 CONVERSAZIONE

will be held at the Great Central Hotel, London, on Wednesday, November 17th, from 3 to 6 p.m.

Arrangements as in previous years. Tickets, price 3/6 per head, including tea, may be had on application to

MRS FOGGITT, Stoneybrough, Thirsk, Yorks.

Please enclose cheque or postal order, and stamps for reply. A few friends may be invited.

REVENUE ACCOUNT FOR 1936.

GENERAL FUND.

To Balance from 1935,	£137	18	1	By Printing Reports,	£145	5	7
,, Subscriptions for 1936,	189	5	0	,, Expenses of Distributor,	1	16	0
,, Subscriptions in advance,	32	15	9		147	1	7
,, Sales of Reports, Reprints, and Advertisements,	6	13	1	,, Honorarium to Secretary, one year,	50	0	0
,, Executors of the late W. H. Pearsall: Balance of Cash in hand,	0	10	0	,, Insurance,	0	6	0
,, Excursion Fees,	0	7	6	,, Printing and Stationery,	4	0	3
				,, Posts & Petty Exp'diture,	16	14	7
				,, Balance,	149	7	0
	£367	9	5		£367	9	5

PUBLICATIONS FUND.

To Balance from 1935,	£109	18	4	By Balance,	£121	0	4
,, Sales of Comital Flora and Plant List,	11	2	0				
	£121	0	4		£121	0	4

LIFE MEMBERS' FUND.

To Balance from 1935,	£116	8	0	By Balance,	£123	8	0
,, Composition,	7	0	0				
	£123	8	0		£123	8	0

Miss TROWER'S FUND.

To Balance from 1935,	£16	7	11	By Balance,	£16	7	11

BENEVOLENT FUND.

To Balance from 1935,	£41	3	6	By Balance,	£41	3	6

BALANCE SHEET AT 31st DECEMBER 1936.

General Fund,	£149	7	0	National Savings Certificates, at cost,	£400	0	0
Publications Fund,	121	0	4	Cash at Bank,	51	6	9
Life Members' Fund,	123	8	0				
Miss Trower's Fund,	16	7	11				
Benevolent Fund,	41	3	6				
	£451	6	9		£451	6	9

(Signed) FRANCIS DRUCE, Acting Hon. Treasurer.
(Signed) JOHN CHAPPLE, Acting Hon. Secretary.

16th February 1937.—Examined and found correct.

(Signed) H. W. PUGSLEY.

REPORT OF THE HONORARY SECRETARY FOR 1936.

By the death of Mr W. H. Pearsall on August 12th the Society loses its Honorary Secretary, who, during his four and a half years of office, was unsparing in his efforts to do all in his power to further the interests of the Society, and who for well over twenty years was an active member of the Club. His kindly help, conveyed in his beautifully written letters, will long be remembered by those members who had sought it. As a result of the vacant Secretaryship, the Committee decided to make the following provisional arrangements until the Annual General Meeting: to separate the offices of Honorary Secretary and Honorary Editor, appointing Mr John F. G. Chapple Honorary Secretary and Mr Patrick M. Hall Honorary Editor. In consequence of these proposed changes, the Committee have revised the Rules and their recommendations, adopted by the Annual General Meeting, are printed on pp. 200-204. On the resignation of Sir Roger Curtis, owing to his absence for a year in South Africa, Mr Francis Druce was appointed Acting Honorary Treasurer.

The Centenary Dinner of the Society was held on November 18th at the Monico Restaurant. About forty members were present with the Chairman in the chair, and the Earl of Crawford and Balcarres as the principal guest to propose the toast of the "B.E.C." The arrangements were in the hands of a capable sub-committee consisting of Mrs Foggitt, Mrs Knowling, Mr Druce and Mr Gilmour, and they deserve the Society's thanks for having so admirably arranged this function. On the same day the Conversazione took place, as usual, in the Great Central Hotel, when Mrs Foggitt delivered an account of the history of the B.E.C. since its inception in 1837, which was received with loud applause by the large gathering present. A fuller account of the Centenary Dinner and the speeches appears on p. 210.

The excursions arranged for 1937 are based on those recommended by the Field-work Sub-Committee appointed at the last Annual General Meeting. A report of the very successful excursions in 1936, arranged by Mrs Foggitt, is given on pp. 208-209.

We regret to record the death of the following members:—Miss M. Cobbe (January 1937), Mr D. A. Jones, Viscountess St Cyres, Dr F. W. Stansfield (February 1937), Mr J. G. Wilkinson (March 1937), Mr E. B. Wilkinson, and of our corresponding member, Mr A. R. Horwood (March 1937); also the death in 1935 of our Hon. Member, Dr F. Jaquet of Fribourg—the authority on *Alchemilla*. During the year 1936 and up to date, we have to report the resignation of 21 members, and the loss of 5 others who have ceased membership under Rule 6 (d). To offset this we are glad to announce the addition of 26 new names to our membership roll since the publication of the Report for 1935. Thirteen of these have joined in 1937, but the total of new members for 1936 is 29, which, on balance, shows a slight increase in the total membership of the Society, now standing at 435 ordinary and exchange members.

The Society is deeply indebted to the authorities of the British Museum, Cromwell Road, and of the Royal Botanic Gardens, Kew, for their willing help and co-operation. We are grateful for the help rendered by Dr P. Aellen, and by many British botanists, especially Mr G. O. Allen, Mr A. H. G. Alston, Mr G. M. Ash, Mr W. C. Barton, Mr E. B. Bishop, Mr C. E. Britton, Dr R. W. Butcher, Miss Campbell, Lady Davy, Mrs H. Drabble, Mrs Foggitt, Mr P. M. Hall, Dr W. O. Howarth, Mr C. E. Hubbard, Mr J. E. Lousley, Mr H. W. Pugsley, Mr J. Ramsbottom, Rev. H. J. Riddelsdell, Mr N. Y. Sandwith, Dr W. A. Sledge, Dr T. A. Sprague, the late Dr F. W. Stansfield, Mr A. L. Still, Dr W. B. Turrill, Miss Vachell, Mr A. E. Wade, Mr A. J. Wilmott, Lt.-Col. A. H. Wolley-Dod; also to Mr E. C. Wallace for undertaking the exchange distribution for 1936.

SUMMARY OF PROCEEDINGS OF MEETINGS.

The Annual General Meeting marking the close of the 1935 season was held on March 25th, 1936. The Rt. Hon. Harold Baker, Mr J. Ramsbottom, Sir Roger Curtis, and Mr W. H. Pearsall were unanimously re-elected Chairman, Vice-Chairman, Hon. Treasurer, and Hon. Secretary respectively. Sixteen members of the Committee were elected under the new Rules, as follows:—

To retire March, 1937:—Mr Corstorphine, Lady Davy, Mrs Foggitt, Dr Sledge.

To retire March, 1938:—Hon. Mrs Baring, Mr Wade, Mrs Wedgwood, Mr Wilmott.

To retire March, 1939:—Dr Butcher, Mr Gilmour, Mr Hall, Miss Vachell.

To retire March, 1940:—Mr Chapple, Mr Druce, Mr Sandwith, Mr Simpson.

The Reports of the Hon. Secretary and Hon. Treasurer were adopted, and were printed in the Society's Report for 1935.

Arising out of a recommendation from the Committee that a small Sub-committee should be appointed to review the whole question of excursions and to report to the General Committee in November 1936, the following members were elected to serve on this "field-work" sub-committee:—Miss Campbell, Miss Vachell, Dr Butcher, and Mr Pugsley. The programme announced by Mrs Foggitt as arranged for 1936 was approved and her further suggestion that the Centenary of the Society should be celebrated by a Dinner was adopted.

Mr Sandwith was elected to fill the vacancy in the Publications (Editorial) Sub-committee caused by the resignation of Dr Turrill.

In consequence of the death of the late Hon. Secretary, a special meeting of the Committee was called on September 30th, 1936, at which provisional arrangements were made, as recorded above, for the carry-

ing on of the Secretarial and Editorial work of the Society. Mr R. H. Corstorphine was added to the Publications Sub-committee, and that sub-committee, with the addition of Mr Francis Druce, was instructed to draft a revision of the rules for the consideration of the Committee.

A meeting of the Committee was held at Burlington House on November 18th, at which the draft of the revised rules was discussed, and, with a few amendments, adopted for recommendation to the next Annual General Meeting. The report of the " Field-work " Sub-committee was also presented. (See Appendix at end of Report.)

The report, which was followed by a suggested programme of excursions for 1937, was adopted, and Miss Vachell, Dr Butcher, and the Hon. Secretary were appointed to the " Excursions " Sub-committee to make arrangements for the programme outlined for 1937. It was decided that the question of inviting guests should be left to the Leaders of Excursions, that where accommodation was limited guests should not be invited if this would mean the possible exclusion of members and that where guests were invited the member issuing the invitation should pay a fee of 2/6 per guest to the Society.

Mr Pugsley was appointed Hon. Auditor and Mr Wilmott was appointed to be the Society's representative on the Wild Plant Conservation Board.

A meeting of the Committee was held on March 17th, 1937, at which Mr Pugsley was re-elected Hon. Auditor for the ensuing year and the Hon. Secretary was appointed Distributor of the Exchange Club for 1937. Mrs Foggitt was invited to make arrangements for the Conversazione on November 17th, 1937. Mr Corstorphine was co-opted to the Committee and the Publications and Excursions Sub-committees were re-appointed for the ensuing year.

Forty-three members were present at the Annual General Meeting held on the same date and presided over by the Chairman, the Rt. Hon. H. T. Baker. After the adoption of the Hon. Secretary's and Hon. Treasurer's Reports and the recommended revision of the Rules, the Officers of the Society were elected, as enumerated on p. 197.

The thanks of the Society are due to the Trustees of the British Museum (Natural History) for affording facilities for the Committee Meeting of September 30th, 1936, and to the Linnean Society of London, in whose Rooms all the other meetings were held.

REPORT ON THE EXCURSIONS ARRANGED IN 1936.

Mrs Gertrude Foggitt.

The third season of the Society's Excursions has proved as successful and well attended as those of the two previous years. The first fixture on Saturday, May 23rd, was an afternoon on Chailey Common, Sussex, under the leadership of Lady Davy. Between 30 and 40 members and

friends, including 5 of the Committee, explored this typical south-eastern common, which is specially rich in heath, bog and aquatic plants. *Viola lactea* and its hybrids, and an unusual number of Carices (including the rare *C. montana*) were noted, and an apparently new record of *Ranunculus lutarius* from this area was made. Plants were examined and discussed over a good tea.

More ambitious was a week in the Channel Islands, beginning June 2nd, when the writer was responsible for the arrangements, and Lady Davy, who knows the Islands well, again led. Eighteen members and two friends formed the party, several of whom made the crossings by air. Five days were spent in Jersey and two in Guernsey, and by arranging special terms at Hotels and chartering private charabancs, particularly low expenses were ensured. Despite none too favourable weather conditions, the ground was entirely covered, and practically all the interesting plants seen. Two new members were the result of a specially happy and successful time.

Perfect weather favoured the three days spent in North Somerset, June 23rd-25th. Here the leaders were Miss Miller and Miss Vachell. Headquarters were at Burnham, and some 30 members and friends joined in excursions to Berrow Dunes, Mendip, Cheddar Gorge, Shapwick Peat Moors and Brean Down. This varied country provided exceptionally fine limestone and aquatic floras. Again two new members were the direct result.

A second afternoon Excursion on July 11th was led by Col. Wolley-Dod and Miss Pickard, to the Sussex Downs near Lewes. A party of approximately 25, under genial guidance, saw many typical downland plants, and even heavy rain did not damp their enjoyment.

It may here be insisted that in none of these excursions was any private property entered or bye-laws infringed, and the leaders are entirely convinced that no secrets were revealed and that the plants seen neither suffered nor would suffer any damage.

B.E.C. CENTENARY.

Celebrated November 18th, 1936.

THE CONVERSAZIONE.

The Conversazione seemed to go with more than its usual swing. In consideration of the Centenary of the B.E.C. the Wild Flower Society, who share in the party, graciously waived all part in the speeches which were naturally a specific feature of such an unique occasion. The Chairman paid sympathetic tribute to the late Mr Pearsall, and thanked Miss Lucy Burton (many of whose paintings were on view) for a fine picture of our historic "emblem" which she has presented to the Society as a recognition of the help which many members have given her in making her collection of illustrations of the British flora. Mr Baker also congratulated "The Father of the

B.E.C.," Mr Thomas B. Blow, who, at the age of 83, was again able to attend this meeting of a Society he joined some 65 years ago.

Mrs Foggitt then read a résumé of the chequered history of our Society, which held its first Anniversary Meeting 100 years ago almost to the day, and ridiculed the idea sometimes expressed that this was no Centenary since the original name of "The London Botanical Society" is no longer our title. She instanced the case of her own grandmother who lived to the age of 102, but had been born a Miss Lousada and died a Mrs Bacon. Was she, or was she not, a Centenarian? In her paper Mrs Foggitt was able to prove the unbroken continuity which had existed from the very commencement; while she also unfolded a record of achievements and a roll of famous names that may well fill us with pride in the past and encouragement for the future. Dr Butcher announced the Excursion Programme for next year, and Mr Hall voiced the thanks of the company to the Chairman. A number of most interesting botanical exhibits were a special feature of the afternoon, and happy groups gathered about the well-laden tea-tables.

THE CENTENARY DINNER.

The Centenary Dinner was held the same evening at the Café Monico in Piccadilly Circus. The Chairman, the Rt. Hon. H. T. Baker presided, and the guest of honour was the Earl of Crawford and Balcarres. In spite of the fact that many members had to catch trains to the country earlier in the day there was a good attendance. Lord Crawford, in proposing the health of the Society and wishing it long life, made a witty speech interspersed with stories which delighted his audience. He made good use of a newspaper cutting, which he admitted he had filched from Mr Ramsbottom, concerning the Crown and Anchor in the Strand, the original meeting place of the Society. Mr Ramsbottom in reply, after pointing out that Lord Crawford was a Trustee of the British Museum, a Fellow of the Royal Society and President of the C.P.R.E., added some interesting details in the history of the Society to those which Mrs Foggitt had related at the Conversazione. Mr J. S. L. Gilmour proposed a vote of thanks to the Chairman in a graceful speech, and alluding to his previous political career quoted as parallels the love of natural history shown by Lord Grey of Fallodon and the addiction of Mr Winston Churchill to bricks and mortar. Mr Baker, in reply, thanked Mr Gilmour on behalf of those present for the magnificent leaf of *Victoria regia* which he had brought from Kew to adorn the centre table. After congratulating the Society on its progress from the Crown and Anchor to the rooms of the Linnean Society, and noting the great increase in its numbers, he confessed that he gladly turned from politics to botany and counted it a high privilege to be chosen to preside over the Botanical Society.

OBITUARIES.

William Harrison Pearsall (1860-1936). Every member of this Society must have been profoundly shocked by the news of the sudden death of the Secretary on August 12th, 1936, for he bore his years lightly and few can have realised that he was as much as 76 years of age. William Harrison Pearsall was born on June 6th, 1860; he belonged to an old Worcestershire family and was educated at Stourbridge Grammar School. In his younger days he was proficient in many branches of sport, cricket and association football in particular, and always showed a love of the outdoor life and an interest in things scientific. Taking up teaching as a profession, he was first employed at Birmingham, but was later transferred to Dalton-in-Furness, where a large part of his life was spent and where his scientific bent became definitely focussed upon Botany. This was due no doubt partly to his environment but most to the interest he took in the botanical work of his son (now Dr W. H. Pearsall, D.Sc., F.L.S.). Always a keen fly-fisherman, much of his leisure was spent on the English Lakes, which led to an intensive interest in their flora. His name will always be remembered in connection with his discovery of *Hydrilla* and *Najas* in Esthwaite Water in 1914, and this was a further factor in the strengthening of the friendship, already formed, with the late Dr Druce. Stimulated, as so many were by this friendship, he entered upon a specialised study of such aquatic genera as *Potamogeton*, *Batrachium*, *Callitriche*, and also *Carex*. The culmination of the work with his son was the publication in *Journ. Linn. Soc., Bot. 43* (1925), a joint paper on the Plankton Algae of the British Lakes.

Pearsall had many other activities at Dalton-in-Furness. A Liberal in politics, he was for many years Chairman of the Lonsdale Liberal Federation. A member of the Urban District Council, he was at different times Chairman of the Finance, Health and Library Committees. As he was also in great demand as an organist, it will be seen how versatile was his contribution to the public life of Dalton-in-Furness. On retiring to Kent in 1925, he became an active member of the Tunbridge Wells Natural History and Philosophical Society.

Before his death in 1931, Dr Druce had already suggested the name of Pearsall as his successor in the Secretaryship, and on Druce's death he was elected to that office, which he held for more than five years. No man could have been more difficult to follow than Druce, and Pearsall, taking over at a critical moment in the history of the Society, deserves the thanks of every member for holding it together and seeing it through a difficult period. Not many realise the volume of correspondence entailed: to every enquiry he gave most meticulous attention and nothing could have been more helpful than his fully-detailed replies, often accompanied by diagrams. Every letter was written by hand and in writing that was a joy to read. His very sudden collapse must be attributed in part to his strenuous work for the Society,

work in which he was engaged at the moment of death. Besides his excellence as a correspondent he was an interesting and congenial companion in the field. He is survived by his widow, two daughters, and the son already mentioned: to them the sympathy of our members will be extended.

In addition to his work for this Society, Pearsall was referee for Phanerogams for the *North Western Naturalist*. He published several papers on the Flora of North Lancashire in the *Lancashire and Cheshire Naturalist*, and, as is well known, completed the editing of the *Flora of Surrey* upon the death of the late C. E. Salmon. As Secretary of this Society, he edited the Reports for the five years 1931-35. Besides a paper on *Potamogeton Macvicarii* Ar. Benn. in *Journ. Bot.*, *71* (1933), and numerous short notes in the B.E.C. Reports, he published the following papers in recent Reports of this Society:—"*Sagina Reuteri*" (1927); "The British *Batrachia*" (1928); "Notes on *Potamogeton*" i. (1929) and ii. (1930), forming together a Monograph of the British species of that genus, in which he was recognised to be an expert; "× *P. Bennettii* Fryer," "*Zannichellia*," and "The British Species of *Carex*" (1932); "Beginning the Study of Grasses" and "Some Hybrid Carices" (1933); "Notes on the British Orchidaceae.—I" (in collaboration with the present writer), "Notes on the Umbelliferae" and "The British Species of *Callitriche*" (1934).—P.M.H.

Daniell Angell Jones (1861-1936). Daniell Angell Jones will be chiefly remembered for his work in connection with bryology, having been Secretary of the British Bryological Society from its formation until early in the year in which he died. But his botanical interests were not confined to bryology alone: he was a member of this Society for many years and during the period of his residence at Machynlleth and Harlech obtained an intimate knowledge of the flora of Merionethshire and Caernarvonshire. Numerous records stand above his initials in *Welsh Flowering Plants* and a MS. Flora of Merionethshire (said now to be in the Harlech Library) won for him a prize at the National Eisteddfoed held at Blaenau Ffestiniog in 1898.

A native of Liverpool, Jones was born on July 14th, 1861: becoming a schoolmaster, he taught at Machynlleth and Harlech. During the Great War, he was an agricultural lecturer under the University of Wales, being granted the degree of M.Sc. in 1918. He retired from teaching in 1924 and was elected A.L.S. in 1925. Living in retirement at Cheltenham he devoted all his energies to the encouragement of the study of mosses and lichens. During the last five years of his life he lived at Bristol, where he died, after an operation, upon October 6th, 1936.—P.M.H.

Miss Clara Ethelinda Larter (1847-1936). Though not personally a member of this Society, Miss Larter identified herself largely with its objects and was well known to many of our members, so that it is but fitting that reference should be made to her passing at the great age

of 89. Born in or near Leeds on June 27th, 1847, she came to Torquay in 1857 and remained there for the remainder of her life, except for an interlude of about 14 years (1885-1899) spent at Barmouth. On her return to Torquay she became identified with the Torquay Natural History Society and with the Botanical Section of the Devonshire Association. For many years she was Chairman of the Committee responsible for the publication of the new Flora of Devon but was compelled by ill-health to resign from this position when the completion of the work, to which she gave many years of her life, was almost in sight. Her publications included "Notes on the Botany of North Devon" (1897) and "A Manual of the Flora of Torquay" (1900). Her herbarium has been added to the collections of the Torquay N.H.S.

None privileged to have enjoyed Miss Larter's friendship will think of her as anything but an outstanding character. Until within a very few years of her death she conducted the meetings of the Botanical Section of the Devonshire Association in a manner that was an education to hear. Her letters, written in violet ink with lines crossed and re-crossed, were unique. Her memory and activity were alike unfailing: long after she had passed her 80th year, she would enjoy a longish walk and the writer has a lively recollection of seeing her partly pushed, partly pulled under a gate which could not be opened or climbed. Her faculties never failed and the esteem in which she was held in the county of her adoption may be judged by the references to her death in the pages of the Devonshire Association's Transactions.—P.M.H.

EDITORIAL NOTES.

PATRICK M. HALL, Hon. Editor.

Although not the commencement of a new volume, this Report, for a sad reason, marks a change and it may, therefore, be an appropriate time at which to make a few remarks about the composition and arrangement of the Report.

The Editorial sub-committee have given much consideration to the arrangement, so that the contents should be set forth in an orderly and logical sequence. The sequence adopted here may not be the best that it is possible to find but it is hoped that with the co-operation of members the most suitable sequence will shortly be found and become a permanent feature of the Society's Reports. Suggestions from members for the improvement of the Report, either in the way of contents or arrangement, will be welcomed and given careful consideration.

Broadly speaking, the present arrangement divides the Report into two main sections, Secretarial and Editorial. The former deals with the various aspects of the activities of the Society: matters relating to membership, such as changes of address, the annual accounts, a résumé of the proceedings of General and Committee Meetings, Excursions and Obituary Notices. The second section, consisting of Notes, Records and

Papers, sets forth the results of those activities, and it is the arrangement of this section which I wish to explain in rather more detail.

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The order, which has been finally evolved after much thought, is as follows:—Editorial, Personalia, Plant Notes, Plant Records, Papers, Reviews, Abstracts and Bibliography.

"*Editorial*" needs no explanation.

"*Personalia.*" Under this heading will be printed such matters as members' lists of *desiderata*, notices of forthcoming publications and so on. It is suggested that this section might be made more useful to members than it is at present. For instance, notice might be given of special groups on which members are working so that others could not only send them their problems but also supply them with material for research: or members intending to visit certain localities or investigate certain areas could notify their intentions: or again, through the medium of this section, books or specimens could be borrowed or duplicates exchanged.

"*Plant Notes.*" This section of the Report has been restored to something of the importance which it formerly held, and includes not only original short notes but such Abstracts as affect British taxonomy and nomenclature. The primary object of this section is to acquaint members with newly-described British forms, with plants added to the British Flora and with changes of name.

"*Plant Records.*" All matters dealing with the distribution of plants in Britain, including such Abstracts as may be relevant, will be included under this heading. A word is necessary as to what records will be printed, and also to explain that any records will be welcomed but not necessarily published. It is the intention of the sub-committee to commence the formation of a card-index in which will be filed, by species and vice-counties, all records received whether published or not. Only such records will actually be published as are believed to represent some addition to knowledge; these need not necessarily be new county records, but may also be extensions of range, confirmations of old records not verified for many years, occurrences in unusual habitats or associations, and so forth.

It must be emphasized, however, that all records, whether subsequently published or not, will be placed in the card-index and so made available to those working up special areas or groups. Records need not, as was formerly required, be submitted in any particular form, since all will have to be transcribed, but all records must give the following essential data:—

(a) The specific (and, where applicable, varietal, etc.) name.
(b) Locality and Watsonian vice-county (the county alone will not suffice).
(c) Date.
(d) Name of finder, if not the person submitting the record.

(e) If the plant belongs to a critical group, the name of the expert by whom it was determined: if the plant has not been named by an expert, a specimen must be sent for determination. Records in critical groups will not be published unless this procedure has been complied with.

(f) If material has been dried, the Herbarium in which it is kept, so that it may be traced if required for study.

"*Papers.*" In conformity with the remainder of the Report these will be arranged in logical order. First, papers of general interest: then papers of topographical interest, arranged in vice-comital order: followed by systematic papers, arranged in systematic order.

"*Reviews*," "*Abstracts*" and "*Bibliography*" require little comment, except to say that "*Abstracts*" will be arranged in exactly similar order to that described for papers, while "*Bibliography*" comprises not merely a Bibliography for the Abstracts from Literature, but for the Report as a whole, excepting such papers as may have separate Bibliographies.

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One of the principal objects in the production of this Report has been to secure accuracy. In a publication of this kind it is perhaps impossible to obtain absolute accuracy, but great efforts have been made in the way of verifying doubtful records, settling points of nomenclature, and checking references. This has inevitably led to delay in production. The ambition of the Editorial sub-committee is to produce the Annual Report at such a time that it will be of use to members during the succeeding season. This can only be accomplished by the co-operation of all contributors, who will please note that *the latest date for the acceptance of Notes, Records and Papers is January 31st in each year, and that all such communications should be addressed to the Hon. Editor.* (Authors of papers are allowed 25 reprints gratis and further copies at cost price.)

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I should like to take this opportunity of expressing to the members of the Editorial sub-committee, to Mr Chapple and to other members too numerous to mention individually, my gratitude for constant and most willing help.

PERSONALIA.

HERB. ARTHUR BENNETT.

This botanist's collections are now at the British Museum (Natural History), but certain specimens are missing and were never received. Would any botanists who borrowed portions of the collection and have

not returned them kindly do so, as their absence is holding up certain work? Especially sought are the Potamogetons of the *pusillus* and *pectinatus* groups (British herbarium), and the second halves of his special Caithness and Outer Hebrides collections. The latter are on foolscap-sized papers, and were tied up in cardboards no doubt labelled similarly to the first halves, which bear the appropriate vice-county number and "Ranunculaceae to Compositae." It seems clear that these had been loaned and not returned at the time of Bennett's death, for he had a small bundle of supplementary material from Caithness and the Outer Hebrides which was evidently awaiting incorporation when the main series was returned.

A. J. Wilmott.

A NEW FLORA FOR DEVON.

There has only been one general Flora for Devon, the *Flora Devonicnsis* of Jones and Kingston, published in 1829. Since that date there have been only local plant-lists and, over fifty years ago, Briggs' *Plymouth Flora*, which only refers in part to Devon. As Devon consists of two vice-counties and contains much of interest, an up-to-date Flora is long overdue.

For many years work on the Flowering Plants and Ferns of Devon has been carried on with a view to such a publication. The late W. P. Hiern laid the foundations with his extensive MS. notes and Herbarium and afterwards the late Miss C. E. Larter became Editor. On her resignation owing to ill-health this work was undertaken by the Rev. W. Keble Martin, M.A., F.L.S., assisted by a Committee. The MS. will, it is hoped, be in the hands of the printers at an early date and an appeal for subscribers has been issued. The numerous Herbaria in Devon, as well as those at the British Museum and Kew, and those of the late Dr G. C. Druce, E. S. Marshall and others have been consulted. Many zealous helpers and observers in the county have given their assistance; much information has been collated from the Reports of this Society, from the Reports of the *Botanical Recorder for Devon*, from the *Journal of Botany* and other sources. Finally, the Committee is indebted to many leading Botanists for help in the determination of the more critical genera; in some cases complete sections have been compiled by such outside helpers.

It is hoped that this volume will be a valuable addition to the list of County Floras.

FLORA OF GLOUCESTERSHIRE.

Will members possessing specimens or records, or both, of Gloucestershire plants (however common) notify Rev. H. J. Riddelsdell, 4 Wolverley House, Goring, near Reading, Berks, as Editor of the County Flora now in course of preparation? The name of the plant, locality, date (year only) and, in the case of critical plants, the authority for the determination should be given. At present there remain many gaps in the known distribution.

FLORA OF OUTER HEBRIDES.

Miss M. S. Campbell, c/o Dept. of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, is collecting all data relating to the Flora of the Outer Hebrides. She would be glad to receive any information on the subject, particularly with reference to publications (excluding the *Journal of Botany*, *Annals of Scottish Natural History*, and the *B.E.C. Reports*), collections (other than those in the National Herbaria) and personal records and notes.

VIOLA.

The Hon. Editor will be glad to receive fresh gatherings of Pansies. Correspondents are asked to attend to the following points:—

i. Entire plants are desirable, and rooted where circumstances permit.
ii. A gathering should be representative of all the plants seen growing in the locality, not a selection of the most conspicuous individuals.
iii. Information should be given as to the nature of the soil (e.g., whether heavy or light, calcareous, sandy, etc.), whether arable or pasture, and, if arable, the accompanying crop (e.g., growing corn, stubble, clover, etc.)
iv. It is particularly desired to see gatherings from precisely the same localities at different seasons of the year.

HYPERICUM PERFORATUM L.

Hypericum perforatum L. has become such a serious pest in Australia that the Dominion Government has had to take steps to control it. In England the foliage of this plant is liable to damage by the larvae of certain small moths. These larvae spend the winter, in a half-grown state, clinging to the dead flower-heads. They are thus comparatively easily collected by sweeping areas of the *Hypericum* in the autumn. In order to obtain sufficient quantities for export, Mr Stanley Garthside, M.Sc., Research Officer of the Imperial Institute of Entomology, Farnham House Laboratory, Farnham Royal, Bucks, would be glad to hear of extensive areas of *H. perforatum* in the South of England suitable for sweeping. Ditches and hedgerows are not suitable.

OENOTHERA.

In connection with the projected new British Flora under the editorship of Professor A. G. Tansley, Professor R. R. Gates has undertaken to prepare an account of the *Oenothera* species naturalised in various parts of the British Isles. In order to make this account as complete as possible, Professor Gates would be glad to hear, from local botanists or others, of localities in any part of the country where *Oenothera* is growing wild. A notification of the area would be still more useful if accompanied by notes and specimens, if possible in flower.

UTRICULARIA.

The Hon. Editor will be glad to receive flowering material of this genus. Many records of *U. vulgaris* are undoubtedly errors for *U. major*, but this can only be decided by seeing the plant in flower. Flowers of *U. intermedia* and of *U. ochroleuca* (*except* from Dorset in the case of the latter species) are especially desired. Should members happen to find flowering material upon the Continent, that would also be most valuable.

ORCHIS USTULATA L.

There have been very few recent reports of this species from many of the Midland and Eastern counties, for which it is recorded. The Hon. Editor would welcome any information throwing light upon the present status of this species.

ALLIUM.

The Bailey Hortorium, Cornell University, New York, U.S.A., wish to obtain Herbarium specimens of this genus, particularly from the Eurasian area. Will any members, who have duplicates to spare, kindly send them to the Hon. Secretary, Yardley Lodge, Oxford, before December 1st, 1937, in order that he may forward them?

NOTE.

Plants for naming should be sent to the Hon. Secretary, Yardley Lodge, Crick Road, Oxford.

PLANT NOTES.

Note.—In the case of direct contributions the name of the author of the Note is printed in small capitals. Where the name of the author is not in small capitals, and is coupled with a date (the name and date, or date alone, being bracketed) the Note is an Abstract, the origin being ascertainable by reference to the Bibliography.

11/1b. Aquilegia vulgaris L., var. Milleriana Dr. This varietal name is treated as a *nomen confusum* by Lousley (1936 A, 194-6), where there is a useful discussion of the British forms of this species.

54(2). Brassicella Fourreau. The Lundy Island *Brassica*, recorded by Dr F. R. Elliston Wright in *Journal of Botany*, November 1933, as *Brassica Cheiranthus* Vill., is described by O. E. Schulz under the above generic name as "**Brassicella Wrightii**, spec. nov." (Elliston Wright, 1936). In an observation appended to his description, Schulz states that his new species is most closely related to *Brassica monensis* (L.) Huds., but Pugsley (1936 D) points out that it is more closely related to *B. Cheiranthus* Vill. Elliston Wright (*loc. cit.*) gives a fully detailed account of the plant illustrated by 17 photographic plates. The chromosome number is stated to be 2n = 24 in contrast to 2n = 48 in *B. Cheiranthus*, and it is suggested that this plant is older than both *B. monensis* and *B. Cheiranthus*, possibly dating from the early Pleistocene age, and that it is endemic on Lundy. The three British species of *Brassicella*, *B. monensis* (L.) O. E. Schulz, *B. Cheiranthus* (Vill.) Pugsl., "comb. nov.," and *B. Wrightii* O. E. Schulz, are discussed by Pugsley (*loc. cit.*), with a description of their characters. *B. Wrightii* may prove to be of Mediterranean origin, but at present must be treated as a new endemic British species. *B. monensis*, as far as is known, is also endemic. The plants from Lundy named *Brassica oleracea* L. by W. P. Hiern have been found to be *B. Wrightii*.

89/1b. Polygala serpyllifolia Hose, var. vincoides (Chodat) Druce. This variety was described in *Journ. Bot.*, 1906, 34, from specimens found by F. H. Davey in September 1905 in the parish of Gwennap, W. Cornwall, v.-c. 1. He states that it was first found on an exposed down about midway between Redruth and Truro (presumably Wheal Clifford Downs), and a week or two later on the top of a hill about 700 feet above sea-level (Carnmarth). In Herb. South Lond. Bot. Inst. there are specimens from both these stations collected by Davey dated 28/9/1905 and 30/9/1909 respectively. Prof. Chodat, to whom fresh specimens were sent, drew up a description which will be found in the above account and also in *Rep. Watson B.E.C.*, 1905-6, 43-4, where the plant is illustrated by a good photograph of a herbarium specimen. An account and illustration also appeared in the *Journ. Roy. Inst. Cornwall*, 1907, and there is a translation of the description

in Davey, *Fl. Cornwall*, 62-3, 1909. The most obvious features of this striking (when extreme) plant are the leathery leaves, subimbricate, and usually more or less equal in length along the stem, and the very condensed few-flowered terminal racemes. I have been unable to find any constancy in the floral characters given by Chodat. On June 15th, 1934, I gathered a series of *P. serpyllifolia* from Carnmarth, but all the specimens belonged to quite usual forms of this variable species, and I failed to find any which could be assigned to the variety. This was not very surprising in view of Davey's statement that "The normal time of flowering appears to be late autumn, only a few plants which manage to continue in bloom through the winter being found with flowers in spring" (*Rep. Watson B.E.C.*, 1906-7, 80), but his further remark in that note, that "The plant, to my mind, is quite deserving specific rank," seemed rather surprising. On September 19th, 1936, I again visited Carnmarth and found good specimens of the variety which exactly matched Davey's exsiccata in some plenty on bare ground amongst burnt off *Ulex Gallii*, var. *humilis*, on the flattish summit of the hill. But near these many intermediates occurred, and on the slopes of the hill the typical species was the only form found. In October 1936 I again met with good *vincoides* in a very similar situation in St Leonard's Forest, W. Sussex. It is my belief that *vincoides* is nothing more than a late autumn state of *serpyllifolia* such as one would expect in a situation exposed to strong moisture-laden winds, that it is often accentuated by the burning of the gorse and the consequent enrichment of the soil with ash and the reduction of shelter, and that in spite of its striking appearance it merits neither specific nor varietal rank. All the specimens I have seen have been gathered in late autumn.—J. E. Lousley.

185/18(3). **Rubus polyoplus** nom. nov. (Series Vulgares.) *Rubus euoplus* W. Wats. in *B.E.C. 1932 Rep.*, 21 (1933); not *R. euoplus* Foerster, *Fl. Exc. Aachen*, 156 (1878).—Wm. Watson.

185/95. **R. rubristylus** spec. nov. (Series Radulae, Sub-series Foliosi.) *Stem* angular, with concave or furrowed sides, brownish red to deep purple, glaucescent, considerably pilose. *Prickles* slender, rather short, patent or declining from a small base, almost confined to the angles; blackish purple stalked glands, acicles and pricklets very many and mostly short; a few intermediate prickles. *Leaves* quinate pedate, petiole long, furrowed above, deep purple; leaflets glabrescent above, yellowish green or greyish and rather shortly hairy beneath, especially on the veins, margin undulate, unequally and divaricately serrate-dentate, the principal teeth very salient and furnished usually with a secondary tooth on each side; *terminal leaflet* broadly obovate, often somewhat pentagonal, with a truncate, subcordate base and an acuminate-cuspidate point, twice as long as its petiolule.

Flowering branch acute-angled, armed with rather long, acicular, sharply declining, deep purple prickles. *Panicle* narrow, slightly dim-

inished upwards to a truncate apex, naked above, interrupted below, with 4-5 axillary branches exceeding the petiole of the subtending leaf, the middle and upper branches cymose, deeply divided, the terminal flower very long-stalked. Usually only one simple leaf, bearing a few stalked glands on the basal margin. *Rachis* purple, felted and villose, with numerous sunken stalked glands and acicles; pedicels more felted and less hairy, with a few of the stalked glands longer than the diameter of the pedicel. *Flowers* rather small; sepals white-margined, loosely reflexed after flowering; petals white, oblong, very hairy outside; stamens white, much longer than the red styles. Carpels pilose.

Synonym: "*Rubus oigocladus* Muell. & Lefv. ? var. *Newbouldii* (Bab.) ?" Rogers, *Handbook*, 66, not *Rubus Newbouldii* Bab., *Journ. Bot.*, 20-21, 1887.

Type specimen: No. 66, Set of British Rubi, as *Rubus Newbouldii* Bab., Edge Green, near Malpas, Cheshire, August 1893. Collected by A. H. Wolley-Dod. Two sheets in Herb. Mus. Brit.

Distribution: v.-cs. 37, 39, 40, 58. H. 38.

Turio acutangulus, canaliculatus, pilosus, purpureus, glaucescens, *aculeis* gracilibus, paene aequalibus, paucis aliis multo minoribus, e brevi basi patentibus vel declinatis, angulis plerumque insidentibus, glandulis stipitatis aciculisque brevibus instructus. *Folia* quinata pedata, petiolo sulcato. *Foliola* supra glabrescentia, subtus insuper in venis pilosa, viridia vel cinerea, margine undulata, inaequaliter ac diverse serrato-dentata, dentibus majoribus valde exstantibus, utrinque denticulo munitis. *Foliolum terminale* latum, obovatum, sat subito acuminatum, basi admodum truncata subcordata, quam proprium petiolulum bis longius.

Ramus florens inferne acutangulus, flexuosus, aculeis acicularibus, declinatis, haud longis instructus. *Paniculae* plerumque nudae, in apicem truncatum vix angustatae. *Ramuli* inferiores remoti, petiolum sed non totum folium subjaciens excedentes, superiores cymosi, saepe breviter pedunculati, flores in longis pedicellis ferentes. *Rachis* angulata, tomentoso-villosa, multis glandulis stipitatis aciculisque praedita, quarum perpaucae ex hirsutie emergentes. *Flores* sat parvi; sepala cinerea, albo-marginata, post anthesin laxe reflexa; petala alba, oblonga, extus pilosa; stamina alba, longa, stylos semper rubros superantia. *Germina* pilosa.—Wm. Watson.

185/128(2). **R. newbridgensis** Bart & Ridd. Described by Barton and Riddelsdell (1936) from E. Sussex, where it occurs in many places near Worth and eastwards to the Hartfield-Maresfield road. It is uniform, constant and without intermediate forms, and is easily distinguished from any other British bramble by the combination of very fully and variously armed stem, neat concave leaflets, and cylindrical panicle with hairy, densely-armed, glandular rachis.

185/132(2). **R. longifrons** nom. nov. (Series Hystrices.) *Rubus longifolius* W. Wats. in *London Naturalist*, 1934, 62-3 (1935); not *R. longifolius* Host in *Fl. Austr.*, ii, 30 (1835).—Wm. Watson.

199. Saxifraga L. The British species of the Section *Robertsonia* are revised in Pugsley (1936 E), where all the English and Irish forms are dealt with in detail and compared with the Pyrenean and Asturian plants. The typical *S. umbrosa* L. occurs, possibly native, only in Yorkshire and is distinguished by its very obtusely crenate, spreading leaves, flattened, densely ciliated petioles, narrow petals with few red spots and large red capsules. *S. umbrosa* L., var. *crenato-serrata* Bab., the "London Pride" of gardens, is only naturalised in various parts of Britain, differing from the typical form by its more acute crenatures, broader petals with more numerous red dots and capsules which are generally barren and rarely develop. The native Irish species is *S. spathularis* Brot., which is a plant of Portugal and the Asturias, not of the Pyrenees. It is widely distinct from *S. umbrosa* in the shape and toothing of the leaves, which are less densely rosulate and more erect, with scarcely ciliated petioles, and by the greenish capsules.

The names *S. Geum* L., *S. hirsuta* L., and *S. punctata* L. have been applied erroneously in the past. The last named has generally been treated as a member of Sect. *Robertsonia*, but is now shown to be identical with *S. davurica* Willd., a Siberian species of the Sect. *Boraphila* Engl. The other two names have been transposed in the past, the true *S. Geum* L. being a cultivated hybrid form of Pyrenean origin, near *S. umbrosa*, but with cordate leaves. Typical *S. hirsuta* L. (*S. Geum* auct.) has round, crenate leaves, hirsute above and glabrous below, on long, pilose petioles, with flowers spotted with red and with reddish capsules. It is, however, considered probable that this also is not a pure species but another hybrid form, the second parent being a species with obtusely crenate leaves, hairy above and below, unspotted white flowers and greenish capsules. This plant, which is known from Asturias, the Pyrenees and Ireland, is the *S. Geum* of Lapeyrouse, *S. Geum* (ex parte) of Syme, Scully and other British authors, and *S. Geum*, var. *Lapeyrousii* of Sternberg. It is now given the name *S. lactiflora* Pugsl.

The British forms should now appear in the *British Plant List*, ed. 2, as follows: —

24. *umbrosa* L.
†b. *crenato-serrata* Bab. (naturalised).

24(2). *spathularis* Brot.
b. *serratifolia* (Don) Pugsl.

25. **lactiflora** Pugsl.
×*spathularis*=*hirsuta* L.
b. *dentata* (Haw.) Pugsl.
×*umbrosa*=*Geum* L. (naturalised).
b. *acutidens* (E.S.M.) Pugsl. (? naturalised).

213/3b. Drosera rotundifolia L., var. **distachya** DC. Scape divided below the inflorescence into 2-5 very floriferous branches,

each 2.5-4 cm. in length. Near Clarkston, Renfrew, v.-c. 76, R. Mackechnie ex Lousley (1936 A, 197).

220/7(2)×3. **Epilobium adenocaulon** Hausskn. × **hirsutum** L. Waste ground between road and canal, Fleet, N. Hants, v.-c. 12, with both parents, P. M. Hall and W. A. Sledge. First British record of this hybrid; identification confirmed by G. M. Ash.

296/3d. · Galium erectum Huds., var. **hirtifolium** H. Br. in Oborny, *Fl. v. Möhren u. österr.-Schesien*, ii, 735 (1884). Described by Braun as differing from the typical plant in the pubescent stem and pubescent lower and median leaves, lax cymes and elongated pedicels: cf. *J.B.*, *72*, 248 (1934). The variety appears to be not infrequent in England.—C. E. Britton.

381/2b. Doronicum plantagineum L., var. **Willdenowii** (Rouy) A. B. Jackson. This plant, which is commonly cultivated in this country, has the leaves noticeably broader than in the typical species and often slightly cordate or cordate-truncate, resembling those of *D. pardalianches* in outline. It is the *D. plantagineum* of Gibson's *Flora of Essex*, 173 (1862), where it is stated to grow in a lane leading from Widdington to the Jock Wood, on the authority of Edw. Forster, 1800. It still grows in that locality. It is synonymous with *D. plantagineum* L., forme *Willdenowii* Rouy, in *Rev. Bot. Syst.*, 17 (1903); *D. emarginatum* Le Grand, ex Coste, *Fl. Fr.*, ii, 297 (1903); and *D. pardalianches* of *Eng. Bot.*, t. 630, to which plate a radical leaf of the true *D. pardalianches* was subsequently added, which explains why this plate has sometimes been quoted for both species.—Jackson (1936).

†415/3. Picris spinulosa Bertol. Although the summer of 1936 was wet and cool, this plant presented the same appearance in West Kent as it did in the dry summer of 1935. It is well-established over a considerable area about Longfield, Horton Kirby, and Fawkham, and is considered to be a recent introduction, not derived from the native *P. hieracioides*. There appears to be a difference in the first season rosettes of these two plants.—Britton (1936 A).

416/3. Crepis biennis L. As was briefly stated in *B.E.C. 1935 Rep.*, 138 (1936), the controversy with regard to the identification of the three disputed Yorkshire gatherings of *Crepis* was finally settled in favour of the view advanced by Mr R. J. Flintoff. The three gatherings were: (i) from Howden, S.E. Yorks, v.-c. 61, 1915, A. E. Greaves; (ii) from Burton Agnes, near Driffield, S.E. Yorks, v.-c. 61, 1923, M. Lawson; (iii) from Allerston, near Pickering, N.E. Yorks, v.-c. 62, 1931, W. C. Worsdell, J. Green, and R. J. Flintoff. All three have been named *C. biennis* L. by Professor Babcock, of the University of California, so that the addition of *C. oporinoides* to the *British Plant List* is cancelled. Those who wish to follow the whole course of the controversy will find a full list of references in Flintoff (1936 A).

423. Taraxacum L. From plants grown in the Botanic Garden of Lund from seeds collected in Ireland and Wales by Drs Degelius and Nannfeldt, two new species are described and other species (many of them new to Britain) identified by Haglund (1935).

423/12(2). **T. Degelii** G. Haglund in *Bot. Not.*, 430, fig. 1 (1935). Kilmurvy and Inishmore, Aran Islands, Clare, v.-c. H. 9, 1933, G. Degelius. This species should be placed in the *Dissimilia* group, which is parallel to the *Erythrosperma* but differs chiefly by its fruits, which are usually grey or olive-coloured to straw-yellow, but not red. *T. Degelii* is a very distinct species, which may be recognised by its small light brownish fruits and intensely yellow-coloured heads. The ligulae of the marginal flowers have no, or practically no, coloured stripes on their undersides. The stigmas are greenish-black, and the anthers bear little or no pollen. The heads are small, light green with narrow, long, whitish-green, narrowly margined, usually patent or slightly recurved outer phyllaries, which often have a small horn. The leaves are light green, often curled with ± elongated acute-toothed lobes, and hastate or hastate-sagittate terminal lobes.—Haglund (1935).

423/14(2). **T. lissocarpum** Dahlst. in *Kungl. Svenska Vetenskapsakademiens Handlingar*, tredje serien, Band 6, No. 3, p. 24, fig. 6 (1928). Hitchin, Hertfordshire, v.-c. 20, 1933, H. Phillips, det. G. Haglund.

423/23(2). **T. hibernicum** G. Haglund, *loc. cit.*, 433, fig. 2. Inishmore and Kilronan, Aran Islands, Clare, v.-c. H. 9, 1933, G. Degelius. This is a comparatively low-growing species in the *Spectabilia* group, with firm, long, dark, slightly bluish-green leaves, with short, acute claw-like lobes, unfringed or provided with few distant teeth. The terminal lobes are usually fairly small and triangular with the apex ± contracted with rounded margins. The petioles as well as the median nerves and pedicels are obscurely dark-red coloured. The heads are large with a square or slightly rounded base and dark-green phyllaries. The marginal ligulae are flat and slightly yellow with dark purple-coloured stripes beneath. The styles are long-protruding and slightly greenish, and the anthers rich in pollen. The fruits are light brownish-yellow with a conical beak about 0.7 mm. long, which passes into the fruit, which is shortly-spiny, or scaly, above but otherwise ± smooth.—Haglund (1935).

423/49(2). **T. cordatum** Palmgr. Inishmore and Kilronan, Aran Islands, Clare, v.-c. H. 9, 1933, G. Degelius.—Haglund (1935). [This name is said to be synonymous with and is substituted for 423/39. *T. amblycentrum* D. of the *British Plant List*, ed. 2.—Ed.]

423/49(3). **T. crispifolium** Lindb. f. in *Acta Soc. Fauna Fl. Fenn.*, xxix, No. 9, 37 (1907). Killarney, N. Kerry, v.-c. H. 2; The University, Galway, N.E. Galway, v.-c. H. 17, 1933, G. Degelius.—Haglund (1935).

423/61(2). **T. hamatiforme** Dahlst. & Lindb. f., ex Florstr., in *Acta Soc. Fauna Fl. Fenn.*, xxxix, No. 4, 36 (1914). Fishguard, Pembroke, v.-c. 45, 1933, G. Degelius.—Haglund (1935).

423/62(4). **T. insigne** E. L. Ekm. Fishguard, Pembroke, v.-c, 45, 1933, G. Degelius.—Haglund (1935).

423/68(2). **T. latisectum** Lindb. f. in *Acta Soc. Fauna Fl. Fenn.*, xxix, No. 9, 26 (1907). Priory Road, Kew, Surrey, v.-c. 17, 1932, J. A. Nannfeldt; Church of St Joseph and the University, Galway, N.E. Galway, v.-c. H. 17, 1933, G. Degelius.—Haglund (1935).

423/70. **T. lingulatum** Marklund in *Acta Soc. Fauna Fl. Fenn.*, 20 (1926). Marcham, Berks, v.-c. 22, G. C. Druce.—Haglund (1935).

[In the *British Plant List*, ed. 2, under No. 423/70, appears *T. lingulatum* D. (*linguatum*). The name appeared in *B.E.C. 1921 Rep.*, 295 (1922), as "*T. lingulatum* Dahlst. nova species," without any description. But a specimen is cited, which is in Herb. Druce, and Dahlstedt's note on the specimen is "*Taraxacum linguatum* Dt. nov. sp." It appears, therefore, that *T. lingulatum* and *T. linguatum* are both *nomina nuda*, and therefore according to Art. 61 of the International Rules of Nomenclature the name *T. lingulatum* (or *linguatum*) is still available for publication. *T. lingulatum* Markl. (1926) is therefore valid. Haglund makes *T. lingulatum* Markl. synonymous with *T. subexpallidum* Dahlst., which is No. 423/84(5) in the *British Plant List*, ed. 2, see *B.E.C. 1928 Rep.*, 627 (1929).

The resulting position is, therefore, that 423/70 is *T. lingulatum* Markl., the plant named *T. lingulatum* (or *linguatum*) by Dahlstedt is at present without a name or a description, and 423/84(5) *T. subexpallidum* Dahlst. disappears in synonymy.—Ed.]

423/82(4). **T. protractifrons** Dahlst. ex Raunk. in *Dansk exkursion flora* (1934). Roundstone, W. Galway, v.-c. H. 16, 1933, G. Degelius.—Haglund (1935).

423/84(7). **T. subcyanolepis** M. P. Christians. ex Raunk. in *Dansk exkursion flora* (1934). Inishmore and Kilronan, Aran Islands, Clare, v.-c. H. 9; Oughterard, W. Galway, v.-c. H. 16; Galway Town, N.E. Galway, v.-c. H.17, 1933, G. Degelius.—Haglund (1935).

439/1. Oxycoccus quadripetalus Gilib. The British forms of this species are discussed by Lousley (1936 A, 198-200), where in addition to the typical form three varieties are recognised and differentiated as follows:—

O. quadripetalus Gilib. Berry 5-10 mm. in diameter, globular or ovoid, suffused with a rich red (similar to that of the Red Currant) when ripe.

Var. *pyriformis* Druce. Berries pyriform. [Var. c. of *Br. Pl. List.*]

Var. **maculatus** Lousley, *loc. cit.*, 198. Berries uniformly covered

with dark brownish-red speckles, very astringent in taste. The type is described from Oakhanger Bog, N. Hants, v.-c. 12 (misprinted "11"); also known from Methven Bog, Perthshire, from the Austwick district, Mid-West Yorks and possibly elsewhere. [This var. will be numbered 439/1d. in *Br. Pl. List.*]

Var. *microcarpus* Turcz. Very much smaller in all parts. Flowers usually solitary. Berries 5-7 mm. in diameter. A plant of northernmost Europe, restricted to high altitudes in Britain. [Var. b. of *Br. Pl. List.*]

†439/2. O. MACROCARPUS Pursh. The American Cranberry. Margins of leaves less revolute than in the preceding species. Pedicels arising in groups on an elongated rachis, usually terminated by a leafy shoot. Berry 1-2 cm. in diameter, variable in shape and size, but always much larger than in the preceding species. The name of the authority was misprinted " Pers." in *Br. Pl. List.*—Lousley (1936 A, 197-8).

460/3. COLOUR FORMS OF PRIMULA VERIS L. About six plants of *Primula veris* L. with reddish-brown flowers and about twelve with pale lemon-yellow flowers were found by one of the writers growing amongst an abundance of plants with flowers of the normal colour in a field at Wick, Glamorgan. Two or three plants with deep-red flowers were also seen in an orchard at Cefn Coed, Breconshire, by Mrs Arnold Jones. These appear to be quite wild, as Mrs Jones, to whom the orchard belongs, has no knowledge of such a colour form having been planted there.

The late Miller Christy states in *Journ. R.H.S.*, xlix, 19 (1924), that, like the primrose, the cowslip produces, in certain parts of its range, flowers varying from a pale reddish-brown, through terra-cotta, to a very rich dark orange-crimson.

We have found no reference in British works to the lemon-yellow form, but Hegi in his *Illustrierte Flora von Mittel-Europa*, iii, 1751, gives three colour forms, f. *hortensis* Pax., f. *pallida* P. Junge, and f. *albiflora* (Evers), with red, pale-yellow and white flowers respectively. —R. L. SMITH and A. E. WADE.

480/4. GENTIANA AXILLARIS (F. W. Schmidt) Rchb. This name is proposed to replace *G. Amarella* L. by Pugsley (1936 B). It is shown that there are two sheets in the Linnean Herbarium labelled " Amarella " in Linnaeus' hand, both there apparently in 1753. One sheet has two specimens of *G. axillaris* and the other sheet one of *G. germanica* Willd., so that it is impracticable to identify the Linnean name with certainty with either form. Evidence is given in support of Murbeck's view that this species is a true biennial. [*G. Amarella* L. cannot by the Rules of Nomenclature be thus superseded: one of the two sheets must be chosen as a lectotype. I here choose that of " *axillaris.*"—A. J. WILMOTT.]

480/4c. G. AXILLARIS (F. W. Schmidt) Rchb., var **pallida** Pugsl. A form of low and slender growth, with fewer internodes than in the

typical species, the upper often unusually long, and with greenish-white flowers, is thus described by Pugsley, *loc. cit.*, 165-6 and 169.

480/5. G. SEPTENTRIONALIS (Druce) Druce. This is maintained as a species by Pugsley, *loc. cit.*, 167-170. It appears to be an endemic Scottish plant, unknown from the Faeroes and Scandinavia.

480/6. **G. anglica** Pugsl. This name is adopted for the plant previously known as *G. lingulata* Ag., var. *praecox* (Towns.) = *G. Amarella* L., var. *praecox* Towns. This plant is an overwintering annual, whereas *G. lingulata* is a biennial, and for this reason, as well as on account of the different distribution of *lingulata*, it is treated as a separate species, endemic in South England, by Pugsley, *loc. cit.*, 166-7 and 170.

545. EUPHRASIA L. The whole Subgenus *Eu-Euphrasia* Jorgensen is reclassified in an Enumeration by Pugsley (1936 C), numerous new species having been described from various quarters of the Northern Hemisphere since the publication of Wettstein's *Monograph*.

545/2f. E. NEMOROSA (Pers.) Löhr, var. **obtusata** Pugsl. An early-flowering variety recorded only from Sussex and Dorset. Rather dwarf, stem 6-15 cm. high, moderately branched with rather short internodes. Leaves relatively obtuse, scarcely spreading and not recurved.—Pugsley (1936 A, 73).

545/6. E. CAMBRICA Pugsl., forma ELATIOR Pugsl. A luxuriant form described from material gathered by J. E. Lousley on Snowdon in 1935. It differs from the typical form in having *stem* up to 15 cm. high, flexuous with internodes often exceeding the leaves, *leaves* to 8 mm. long, often more hirsute, *corolla* larger, *capsule* retuse rather than emarginate.—Pugsley (1936 A, 72).

558/9. ×MENTHA VERTICILLATA L., forma CALVA Still. This plant was originally collected by J. E. Lousley at Stanmore Common, Middlesex, 10th September 1928, and distributed by him under the reference number Z.107 through the Watson B.E.C. It was determined by the late J. Fraser as ×*M. gentilis*, but it is considered that he gave too much attention to a single variable character, the glabrous pedicel and calyx-tube. This plant differs from *gentilis* in being softly hairy on stem and leaves, and in the shape of the calyx, which is not campanulate, but narrowly tubular and devoid of the glands so conspicuous in *gentilis*.—Still (1936, 202-3).

558/13o. M. ARVENSIS L., var. **decipiens** Still. This variety is characterised by the acuminate leaves, especially the floral ones, with regular acuminate prominent serratures. It is described by Still (1936, 201-2) from specimens from Buckfastleigh, S. Devon.

†618/30. Rumex magellanicus Griseb. This species appears in *British Plant List*, ed. 2, with a ?. In a note on *R. cuneifolius* Campd. (Gilmour, Thomas, and Vachell, 1936), it is stated that two gatherings of that species, Leith Docks, 1921, J. Fraser, and Cardiff Docks, 1925, C. and N. Y. Sandwith, were named *magellanicus*. If, as appears probable, the inclusion of *magellanicus* in *British Plant List* is based on these two gatherings, then this species should be struck out.

650/2×1. Salix fragilis L. × pentandra L. =× **S. Meyeriana** Rostkov. in Willd., *Berl. Baumz.*, ed. 2, 427 (1811) =× S. cuspidata Schultz, *Prodr. Fl. Starg.*, Suppl. 47 (1819), the name adopted in *Br. Pl. List*, ed. 2. Previously supposed to be confined to Shropshire and a few other western counties, this hybrid is now known to be widespread throughout the upper Eden valley, Westmorland, over an area of not less than 60 square miles. It is most remarkable that in Westmorland only male trees occur, while in Shropshire and adjoining counties the hybrid is exclusively female. Since both parents are native, there is no reason to suppose that the hybrid is other than native.—Sprott (1936).

669/7b. Orchis latifolia L., var. ochroleuca (Boll.) Pugsl. The existence of this variety in Britain was uncertain until confirmed by the discovery by Mr J. E. Lousley in 1936 of specimens in a fen near Diss, Norfolk, agreeing exactly with Continental examples.—Pugsley (1936 F, 125).

669/7×9. O. latifolia L. × purpurella Steph. =× **O. latirella** P. M. Hall. This hybrid, which was previously referred to in *B.E.C. 1934 Rep.*, 804 (1935), has been described by Hall (1936 B).

669/9(2)b. O. majalis Reichb., subsp. occidentalis Pugsl., in *Proc. Linn. Soc.*, 1935-6, Pt. 3, 124. The status of this plant, previously described as a variety, is changed to subspecies by Pugsley (1936 F).

669/9(3). O. majalis Reichb., subsp. **Traunsteinerioides** Pugsl., *loc. cit.* This subspecies, described from two localities in Co. Wicklow, and as yet unknown elsewhere, differs from subsp. *occidentalis* Pugsl., in its more slender habit, flexuous stem, and narrow foliage. This plant appears to agree to some extent with Ascherson and Graebner's *O. latifolius*, race B 1 *brevifolius* (founded on Reichenbach's bb *brevifolia*), and also with *O. Traunsteineri* Saut., but is considered to be distinct from both.—Pugsley (1936 F), with plate. (See also p. 332).

669/9(4). O. kerryensis Wilm. in *Proc. Linn. Soc.*, 1935-6, Pt. 3, 126 (Plates 3 and 4). This species is described from specimens gathered at Dingle, Co. Kerry, and differs from subsp. *occidentalis* Pugsl., principally on account of its wide, dotted labellum and unspotted leaves.—Wilmott (1936 B). (For a fuller treatment of this plant see p. 331.)

669/9(5). **O. Francis-Drucei** Wilm., *loc. cit.*, 128 (Plates 3 and 5). This species, described from specimens gathered above Loch Maree, W. Ross, and named in honour of the Society's Hon. Treasurer, resembles *O. Traunsteineri* Saut. in many characters. It is a small plant of slender habit, with few narrow leaves, and a short lax spike of few flowers. The labellum is subdeltoid in outline with a long projecting midlobe and is notable for the brilliant crimson markings upon a white background.—Wilmott (1936 B).

669/10×9(4). ×**O. dinglensis** Wilm., *loc. cit.*, 128 (? O. ELODES Griseb. × KERRYENSIS Wilm.). This plant is described by Wilmott (1936 B) as a hybrid between his *O. kerryensis* "with some form of Spotted Orchis," probably *O. elodes* Griseb. [i.e., *O. maculata* L., sec. Druce, which was subsequently found by myself and Mr N. D. Simpson to grow in the type-locality of *O. kerryensis* Wilm.—ED.]

740/1(2). **Zostera Hornemanniana** Tutin. This newly-described species (Tutin, 1936 A) is probably the same plant as that described by Hornemann as *Z. marina*, var. *angustifolia*; at least it is clear that it is the same as the plant which has been so named in this country. It is described as differing from *Z. marina* L. by its narrower leaves with obtuse apex, by having three primary and two marginal nerves, by its smaller inflorescences and flowers, by the broader scarious margins of the spathe, by the style twice as long as, not equalling, the stigma and by the smaller seeds. It is said to be apparently fairly common round the British Isles and the coasts of Western Europe. It has been tested in cultivation and found to be distinct from *Z. marina*, var. *stenophylla* A. & G. The chromosome number of this species is 12, which is the same as in *Z. marina* and *Z. nana*. The chromosomes are small and very similar to those of *Z. marina*, whereas those of *Z. nana* are considerably larger, so that there appears to be no question of hybrid origin.

753/14. CAREX CAPILLARIS L., forma MAJOR Blytt, *Norg. Fl.*, 243 (1861)=var. ELONGATA [Olney ex] Fernald, *Proc. Amer. Acad. Sci.*, *37*, 509 (1902)=subsp. KAROI Freyn, *O.B.Z.*, *40*, 303 (1890). "This is only a luxuriant state, due to local conditions," says Marshall (*B.E.C. 1915 Rep.*, 380), apparently rightly, and it is usually ignored in botanical works, in spite of its different look from the small forms found in more exposed and better-drained places. In *C. capillaris* the colour of the glumes and fruits varies from pale to dark irrespective of the height of the plant, which varies continuously from dwarf to very tall. The tall form is one of those unfortunate plants which must bear a different name according to the rank given to it, for I cannot find any trace of var. *major* (Blytt) earlier than 1916; it should, however, at present be regarded merely as a form. Its only characters seem to be its size (−3 dm.), and its distant lower spikes and greater number of flowers per spike, both of which may be due to the greater size.

British specimens referable to this form are in the British Museum herbarium from:—N.W. Yorks, v.-c. 65, Gordale, W. West, June 1878;

Mid-Perth, v.-c. 88, Craig na Caillaich, R. Brown, August 1794; Angus, v.-c. 90, Glen Fiagh, E. F. Linton, 15th July 1889; S. Aberdeen, v.-c. 92, or Banff, v.-c. 94, Carn Mor, P. Ewing and C. E. Salmon, 25th July 1912; E. Sutherland, v.-c. 107, Armadale Bay, E. S. Marshall (No. 4143), 16th July 1915; W. Sutherland, v.-c. 108, Tongue Bay (Ardsgionaich Point), E. S. Marshall (No. 1941), 24th July 1897.

Some other gatherings approach the same height, and no exact line can be drawn to separate these from those cited above. It is probably best not to include this form in any list.

The above note is due to another record from Ben Lawers, Mid-Perth, v.-c. 88, by Colonel G. Watts, determined by the late W. H. Pearsall as var. *elongata* Olney, ex Fernald.—A. J. Wilmott.

753/31 and 33. C. tomentosa L. and diversicolor Crantz. At the three stations where I have seen *C. tomentosa* in Surrey, Middlesex and N. Wilts, it has always been accompanied by abundant plants of quite normal *C. diversicolor*. So far as typical specimens are concerned there could be no possible difficulty in distinguishing between the two species, but near Chertsey, on both sides of the Thames, I have noticed very occasional forms of *diversicolor* which closely resemble *tomentosa*. One such specimen in my herbarium from Chertsey Mead, June 17th, 1933, has very narrow leaves slightly glaucous, a sterile shoot such as is common in *tomentosa*, two short ♀ spikes shaped similarly to those of *tomentosa*, the upper almost sessile, the lower very shortly stalked, and only two male spikes, the lower of which is very small. The fruit bears minute white hairs round the edge. It is extremely difficult to assign the specimen to either species, but pending further investigation I have placed it with the extremely variable *diversicolor*.

Kükenthal's experience with these two species is remarkable. In 1890 he published an account of the hybrid between them as ×*C. Bruckneri* with a description and three hybrid forms—*superglauca*, *intermedia* and *supertomentosa* (*Deutsche Bot. Monatsschr.*, viii, 107, 1890). Five years later he withdrew the whole article (*op. cit.*, xiii, 26, 1895). With the exception of a discredited report from Brügger, the only other record of this hybrid which I can trace is that of Kneucker (*BV. Baden*, iii, 303, 1895), and in that case doubt was expressed.

Careful observation on the variations of these two species should be made wherever they grow together.—J. E. Lousley.

753/45. C. Hudsonii Arth. Bennett. This handsome and very distinct sedge occurs in the greatest abundance in many fen and broadland districts of Cambridge, Norfolk and Suffolk, where there are therefore exceptional opportunities of studying the great variation within the species. Here it hybridises frequently with the large forms of *Goodenowii*, and probably also with *gracilis*. Within almost any large fen the following variations (plants suspected of being hybrids being excluded) may be observed:—(1) Female spikes long or short (1.5-7 cm.),

broad or thin. (2) Glumes of female spike pale brown, chestnut, or black, with or without a paler midrib, almost covering the fruit or only about half its length, with or without a distinct membranous margin. (3) Female spikes with or without a prominent spike of male flowers at their extremity, or with male flowers mixed with the female. (4) Leaves broad or narrow (2-6 mm.). (5) Plant tall and slender or short and stout. So far I have been unable to find any correlation between these characters. The form with female glumes pitch-black throughout is very striking and is f. *nigrans* (*C. stricta* Good., var. *nigrans* Beck, *Fl. N.-Österr.*, 136. 1890; *C. stricta*, var. *aterrima* Asch. & Graebner, *Fl. Nordostdeutsch. Flachl.*, 153, 1898). I gathered specimens this year from near Oxborough, W. Norfolk, v.-c. 28, and A. L. Still gathered it at Cwm-y-glo, Llanberis, Caernarvon, v.-c. 49. Although *C. Hudsonii* is a very variable plant throughout its range in Britain, this variation appears to reach its maximum where it occurs in the greatest quantity, thus in some of the stations where it is a scarce plant material is far more uniform. Although I have searched in the recorded localities in North Devon and West Cornwall (both of which are not typical habitats for the species) I have been unable to see *Hudsonii* in either county, neither have I traced herbarium specimens. If any member can produce material from these counties I shall be grateful for an opportunity of examining it.—J. E. Lousley.

753/63×64. C. paniculata L. × C. paradoxa Willd. = × **C. solstitialis** E. Figert, *Deutsche Bot. Monatsschr.*, vii, 86, 1889. When botanising with Col. Watts in June 1936, in fenland near Upton Broad, East Norfolk, v.-c. 27, I was attracted by a sedge which was clearly distinct from any other *Carex* I had previously seen in this country. About five tufts were noticed growing close together amongst an abundance of *C. paradoxa* from which they differed in their taller stronger growth and infertile appearance. Further search revealed several plants of *C. paniculata* on the banks of a dyke about six yards away, and closer inspection of the specimens at home confirmed that they were undoubtedly the hybrid with this species. In size they were about intermediate between the two parents—averaging about 80 cm. in height. The specimens may be briefly described as follows:—Densely caespitose, base of stem sheathed with entire leaf bases (not a dark coloured fibrous mass as in *paradoxa*); stem stout, leafy, about 80 cm. tall; leaves 3 mm. broad, grey-green; spikes very congested 2.5-4 cm. long and about 1 cm. broad; glumes acuminate with narrow hyaline border; fruits all abortive, winged, with a serrate beak. The evidence of *paradoxa* is seen in the closely caespitose habit, the shorter branches of the spike, and the narrower glumes with a narrow membranaceous border. *Paniculata* is evidenced by the character of the leaf base, the more leafy stem, the grey-green leaves, and the winged fruits with serrate beak. Size of plant and width of leaf are intermediate between the two parents. Figert (*loc. cit.*) remarked of his plant "Am meisten erinnert die Rispe an *paradoxa*, aber die Früchte haben wieder mehr

Ähnlichkeit mit denen von *panniculata (sic)*''—a statement which applies equally to my plant from Upton Broad.

On the Continent the hybrid has been observed by Haussknecht (*Irmischia* i, 36, 1881), Schmidt (*Deutsche Bot. Monatsschr.*, xvi, 24), and Appel (*BV. Ges. Thür.*, viii, 43, 1890). It may be the *C. Rotae* described by De Notaris, *Ind. sem. hort. Genuens.*, 24, 1848, but I have been unable to see a copy of this rare catalogue. Specimens from the Danube collected by Dr A. de Degen, 1917, *Hung. Exsicc.*, No. 223, in Herb. Mus. Brit., labelled ×*C. solstitialis* Figert, exactly match my specimens in the nature of the stem base, leaf colour and arrangement of leaves, and shape of fruit.

There is one previous record for this hybrid in Britain. A plant gathered by E. S. Marshall in a swamp between Barton Mills and Icklingham, W. Suffolk (Ref. 3764), is reported in *B.E.C. 1912 Rep.*, 294 (1913). A specimen from this gathering in Herb. Mus. Brit. is clearly correctly named, but the hybrid has not been included in *The London Catalogue*, Edition 11, or in Druce's *Plant List*, Ed. 2.

Aschersón & Graebner (*Synopsis*, ii, 47, 1902) divide the forms of *C. paniculata* × *paradoxa* into two series as follows:—

A. *subparadoxa*. Stem slender, with comparatively abundant fibres at the base. Leaves narrow. Spike with rather elongated, but erect spikelets. Glumes with narrow, whitish membranous edge. Utricle rather globular. Apparently the rarer form—nearest to *paradoxa* in habit and colour.

B. *subpaniculata*. Plant strong and tall. Stem at the base with only moderately developed, often almost lacking, lighter fibres. Leaves broad or rather broad. Inflorescence very large with elongated, often strongly spreading spikelets. Glumes usually with a rather broad membranous edge. Utricles ovate. Appears commoner. Is nearest to *paniculata*.

The specimens collected from Upton Broad (all from the first plant found) do not agree exactly with either of these descriptions, which, however, should prove valuable as indicating the range of variation within the hybrid.—J. E. Lousley.

787/1×2. **Ammophila arenaria** (L.) Link × **baltica** (Fleugge) Link. Ross Links, Cheviotland, v.-c. 68. The discovery of one specimen of this hybrid is described by Heslop Harrison (1936 D). The supposed hybrid origin of *A. baltica* itself is supported by the fact that, whilst every head of *A. arenaria* examined yielded quantities of good seeds, none at all were produced by *A. baltica*.

824/2b. Poa angustifolia L., forma albida C. E. Hubbard. This form, newly described by Hubbard (1936, 108-9) from specimens from Windsor Home Park, Frogmore, Berks, has whitish panicles; this character persists in cultivation. This is a parallel form to the albino form of *Melica uniflora* Retz., distributed from Matfield, W. Kent, by W. H.

Pearsall, *B.E.C. 1932 Rep.*, 456 (1933) = *M. uniflora* Retz., f. *albida* Erick., ex Papp, in *Engl. Bot. Jahrb.*, lxv, 332 (1932).

Poa angustifolia L. (*P. pratensis* L., var. *angustifolia* (L.) Sm.) may be distinguished from *P. pratensis* L. by its more caespitose habit, extremely narrow leaf-blades of the innovations, and smaller spikelets.

825(2). Puccinellia Parlatore. The British species of this group are discussed by Lousley (1936 B), who, following Jansen and Wachter, adopts Parlatore's name for the maritime species, which were formerly included in the genus *Glyceria* R. Brown. This paper includes a key of the British species, a full description with text-figure of *P. pseudodistans* (Crépin) Jans. & Wacht., and an account of the determinations made of British gatherings by P. Jansen, of Amsterdam. The adoption of the opinions expressed in this paper involves a number of changes in the nomenclature in *Br. Pl. List*, ed. 2, and the following forms are referred to:—

825(2)/1=825/5. P. maritima (L.) Parl., with forma reptans, forma major Holmb., forma nana Lange, and var. deflexa Syme. The last name is that given to the gathering (Lousley, F.25) from Egloshayle Salt-marsh, Wadebridge, E. Cornwall, v.-c. 2, 20th June 1934, discussed in *B.E.C. 1934 Rep.*, 996 (1935).

825(2)/2=825/4. P. distans (L.) Parl., with forma virescens Jans. & Wacht.

Var. b. **litoralis** Hack. A tall strong plant with thick stems, broad flat leaves, large panicles with branches up to 1 dm. long and many-flowered spikelets, near Shoreham New Bridge, W. Sussex, v.-c. 13 (Pickard and Lousley).

825(2)/2×1. P. distans (L.) Parl. × maritima (L.) Parl. W. and E. Sussex and E. Kent, v.-cs. 13-15 (Lousley and Wallace). Divided into two forms, *submaritima* and *subdistans*.

825(2)/2×5. **P. distans** (L.) Parl. × **fasciculata** Bickn. Gatherings from Shoreham New Bridge, W. Sussex, v.-c. 13 (Lousley) and Salthouse, near Blakeney, E. Norfolk, v.-c. 27 (Still) were determined as probably this hybrid.

825(2)/3=825/4(2). P. retroflexa (Curtis) Holmb. There were no British specimens of this species in the material examined by Jansen.

825(2)/4. **P. pseudo-distans** (Crép.) Jans. & Wacht. in *Nederl. Kruidk. Archief*, xiv, 10 (1935). This species, described by Crépin from the Mediterranean, and recently discovered by Jansen and Wachter in the Zuider Zee area, is an addition to the British List. It is intermediate in general appearance between *P. distans* and *P. fasciculata* (*Glyceria Borreri* Bab.). From the former it is distinguished by the panicle-branches never becoming deflexed and lacking tubercles in their axils, by the almost sessile spikelets, the narrower margin to the pale and the stronger,

usually excurrent mid-nerve, smaller anthers and stouter, less graceful panicle. From the latter it may be known by the longer panicle-branches, more elongate spikelets and less revolute leaves, and in the fresh state by the rhomboidal (instead of asymmetrical) projection of the panicle. As yet only known in Britain from Salt-Dyke west of Seasalter, E. Kent, v.-c. 15, and near Grain Fort, W. Kent, v.-c. 16 (Lousley).

825(2)/5=825/7. P. FASCICULATA Bickn. (=GLYCERIA BORRERI Bab.).

825(2)/6=825/8. P. RUPESTRIS (With.) Fernald & Weatherby (=GLYCERIA PROCUMBENS Dum.).

No reference is made in this paper to the Irish plant, *G. festucaeformis* Praeger.

825(2)/2×6. P. DISTANS (L.) Parl. × RUPESTRIS (With.) Fernald & Weatherby. Canal-side near Higham, W. Kent, v.-c. 16, 8th July 1899, A. H. Wolley-Dod, as *G. distans* (L.) Wahl., var. *pseudo-procumbens* W.-Dod in *Journ. Bot.*, 84 (1895); see also Marshall and Hanbury, *Fl. Kent*, 405-6 (1899), *B.E.C. 1894 Rep.*, 462 (1895), and *B.E.C. 1902 Rep.*, 64 (1903). The parentage, which has been confirmed as above by P. Jansen, was suggested both by Wolley-Dod and by H. and J. Groves, but the plant has remained in the *London Catalogue*, though not in Druce's *British Plant List*, ed. 2, under the varietal name, which the finder gave to it in deference to the rather undecided opinion of Prof. Hackel. Notes on this plant by Jansen and Wachter will be found in *Ned. Kr. Arch.*, 256 (1930) and 302 (1932). I have frequently searched for it without success in Lt.-Col. Wolley-Dod's Higham station.—J. E. LOUSLEY.

826(2). NARDURUS Reichb.

826(2)/1. N. MARITIMUS (L.) Janchen in *Mitteil. Naturwiss. Ver. Wien*, v, 86 (1907) [=N. TENUIFLORUS Boiss., var. ARISTATUS Rouy, *Fl. France*, xiv, 300 (1913)]. This name replaces *Festuca maritima* L., No. 826/24 in *Br. Pl. List*, ed. 2.—Hubbard (1936, 109).

827/19(2). BROMUS LEPIDUS Holmb., forma LASIOLEPIS Holmb. in *Bot. Not.*, 1924, 326. Most species of *Bromus* of the Section *Serrafalcus* have forms with glabrous or hairy spikelets. *B. lepidus* normally has glabrous spikelets but the form with hairy spikelets has been recorded from Germany and Sweden, as well as from a few localities in Britain. In Richmond Park, Surrey, it was found growing in association with normal *B. lepidus* Holmb., *B. hordeaceus* L. and *B. hordeaceus* L., var. *glabratus* Druce.—Hubbard (1936, 108).

829/1k. LOLIUM PERENNE L., var. **longiglume** Grantzow, *Fl. Uckerm.*, 351 (1880); Rouy, *Fl. France*, xiv, 307 (1913). Roadside, East Meon, S. Hants, v.-c. 11, July 1932, Escombe. This variety has the lower glume as long as or longer than the remainder of the spikelet,

thus resembling *L. temulentum* L., from which it may be distinguished by the slender florets.—Hubbard (1936, 109).

833(2). PHOLIURUS Trin.

833(2)/1. P. FILIFORMIS (Roth) Schinz & Thellung = 833/1. LEPTURUS FILIFORMIS Trin. of *Br. Pl. List*, ed. 2.

833(2)/2. P. INCURVUS (L.) Schinz & Thellung = 833/3. LEPTURUS INCURVUS (L.) Druce of *Br. Pl. List*, ed. 2. The genus *Pholiurus* Trin. is separated from *Lepturus* R. Br. by the fact that both glumes are developed and placed side by side, whereas in *Lepturus* only one glume is developed. *P. incurvus* (L.) S. & T. is based on *Aegilops incurva* L.; the synonymy is discussed by Hubbard (1936, 111-3), where it is suggested that this species is probably native on the south and east coasts of Britain. (See also pp. 291-2 for an account of the British records of this species).

P. incurvus may be distinguished from *P. filiformis* by its spreading or ascending habit, mostly shorter culms, curved and usually shorter rigid spikes, and especially by the very small anthers, 0.5-1 mm. in length. In *P. filiformis* the culms are usually taller and more erect, the spikes elongated and mostly straight, while the anthers are 2-3 mm. in length.

836/1×830/2. ELYMUS ARENARIUS L. × AGROPYRON PUNGENS R. & S. A single plant of this supposed hybrid was seen between Heacham and Snettisham, W. Norfolk, v.-c. 28, Hubbard and Turrill (Hubbard, 1936, 109). Habit of *E. arenarius*, leaf-blades narrower, culms and inflorescence more slender, spikelets with fewer florets, glumes narrower and tapering to a fine awned tip. "The inflorescence is somewhat similar to that of *Elymus geniculatus* Curt., which suggests that the latter may be a hybrid between *Elymus arenarius* L. and a species of *Agropyron*." [Druce, *Brit. Pl. List*, ed. 2, 135, under number 836/2, includes "*E. geniculatus* Curt. ? (*arenarius* × *Agropyron*)" and encloses the name in ⟨ ⟩ brackets signifying extinction.—ED.]

864/1b. OSMUNDA REGALIS L., var. **cristata** Moore. *Nature Printed British Ferns*, Vol. 2, p. 315 (1859). "Fronds, pinnae and pinnules multifid-crisped at the apex." This was described by Moore from plants in the possession of Messrs Osborn & Sons of Fulham, who obtained the plants from a hawker. The wild locality was unknown. Pembrokeshire specimens (see p. 293) exactly match Moore's figure.—A. E. WADE.

PLANT RECORDS.

*=New vice-county record. †=Not native in this locality.

In the case of direct contributions, the name of the contributor is printed in small capitals. In the case of records which are Abstracts, the author's name and date, or the date alone, are enclosed in brackets.

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†1/2. Clematis Flammula L. Persistent on a sandy hillock, Sandwich Bay, E. Kent, v.-c. 15, A. H. Carter, comm. J. E. Lousley.

1/1b. Clematis Vitalba L., var. integrata DC. Graig Hill, near Grosmont, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales.

2/2(5). Thalictrum Babingtonii Butch. Good fruiting material, Berry Head, Brixham, S. Devon, v.-c. 3, P. M. Hall and G. T. Fraser. Det. R. W. Butcher.

5/1. Myosurus minimus L. Abundant in garden, Ampfield, S. Hants, v.-c. 11, A. White, comm. P. M. Hall; still near Claygate, Surrey, v.-c. 17, at a station which was most probably one of those known to H. C. Watson over 75 years ago and recorded in Brewer's *Flora of Surrey*, 1863, J. E. Woodhead and J. E. Lousley; Oughton, *S.E. Yorks, v.-c. 61, J. Kendall, comm. W. A. Sledge.

6/6. Ranunculus Lingua L. Chertsey, Surrey, v.-c. 17, C. E. Britton, W. Johnson and H. W. Kew: although not given for Surrey in *C.F.*, *Top. Bot.* or either *Suppl.*, Salmon (*Fl. Surr.*) records it with the comment "very rare and now extinct in the county." Pond on Benton Moor, near Wallsend, S. Northumberland, v.-c. 67, Temperley (1936, 46): though decreasing in the district generally, this species has colonised this recently-formed pond.

6/22. Ranunculus trichophyllus Chaix. Mill-race below Staverton Bridge, G. T. Fraser; pond, Sharpham, Totnes, T. Stephenson; both S. Devon, v.-c. 3, det. W. H. Pearsall—"peds. very short—under 1.5 cm. This [Staverton] is the first authentic record of this species for v.-c. 3, so far as I am aware." Dunnett, Caithness, v.-c. 109, Miss E. S. Todd, det. R. W. Butcher.

6/24. Ranunculus heterophyllus Weber. Thurso golf links and Dunnett Stream, Caithness, v.-c. 109, Miss E. S. Todd. Det. R. W. Butcher.

6/24c. Ranunculus heterophyllus Weber, var. submersus Bab. Slightly brackish ditch, Lancing, W. Sussex, v.-c. 13, H. W. Kew. Det. R. W. Butcher.

*6/27. Ranunculus sphaerospermus Boiss. & Blanch. R. Test at Stockbridge, S. Hants, v.-c. 11, Mrs G. Foggitt. Det. W. H. Pearsall.

6/29. Ranunculus tripartitus DC. Pools on Gittisham Common, near Honiton, S. Devon, v.-c. 3, B. Godfrey. Det. W. H. Pearsall.

6/33c. Ranunculus Ficaria L., var. bulbifera Marsden-Jones. Lostwithiel and other localities, E. Cornwall, v.-c. 2, Thurston (1936, 3); persistent garden weed, Cardiff, Glamorgan, v.-c. 41, Miss E. Vachell and A. E. Wade (in this case the bulbils are seldom present but when they are present, they appear in great quantities).

7/2. Caltha radicans T. F. Forster. Loch Ussie, W. Ross, v.-c. 105, J. E. Lousley.

9/1b. Helleborus viridis L., var. occidentalis (Reut.) Dr. Orchard hedge-bank, Beer Ferrers, S. Devon, v.-c. 3, E. Masson Phillips; Llandeilo-graban, *Radnor, v.-c. 43, J. G. Williams, comm. Dept. Bot., Nat. Mus. Wales.

9/2. Helleborus foetidus L. Near Wrotham, W. Kent, v.-c. 16, in some quantity, Mrs R. A. L. Cole, comm. L. A. W. Burder.

*19/1. Nuphar lutea Sm. Aucha Lochy, Kintyre, v.-c. 101, Latimer McInnes.

20/1c. Nymphaea occidentalis (Ostenf.) Moss. Hartland Moor, near Corfe Castle, Dorset, v.-c. 9, P. M. Hall and E. C. Wallace; small pool near Recess, W. Galway, v.-c. H. 16, P. M. Hall and N. D. Simpson (the only previous Irish record is from Cregduff Lough, Roundstone).

21/2. Papaver Rhoeas L. Occasional in cornfields, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.* but not N.C.R., see *Top. Bot., Supp.* i, 7.—Ed.]

†21/5. Papaver Argemone L. Barry Docks, Glamorgan, v.-c. 41, J. E. Delhanty, F. Norton, and R. L. Smith; railway bank, near Black Rock, Tenby, Pembroke, v.-c. 45, J. E. Arnett, comm. Dept. Bot., Nat. Mus. Wales.

22/1. Meconopsis cambrica (L.) Vig. Exbourne, N. Devon, v.-c. 4, E. Masson Phillips.

†30/3. Dicentra eximia Torr. Garden escape, established on hedge-bank, Yelverton, S. Devon, v.-c. 3, E. Masson Phillips. Det. Kew.

32. Fumaria L. All the following have been determined by H. W. Pugsley.

32/1b. Fumaria capreolata L., var. Babingtonii Pugsl. Hugh Town, St Mary's, Isles of Scilly, v.-c. 1, J. E. Lousley.

32/2. Fumaria occidentalis Pugsl. Old Town, St Mary's, Isles of Scilly, v.-c. 1, J. E. Lousley.

32/5. Fumaria Boraei Jord. Near Crose Mere, Salop, v.-c. 40, J. E. Lousley and R. C. L. Burges.

32/5c. Fumaria Boraei Jord., var. gracilis Pugsl. Porthcothun Bay, near St Merryn, W. Cornwall, v.-c. 1, J. E. Lousley.

32/5d. Fumaria Boraei Jord. var. britannica Pugsl. Rozel, Jersey ("approaching *F. muralis* Sond."), J. Chapple; St Mary's, Isles of Scilly, v.-c. 1 (" probably var. *britannica* "), J. E. Lousley; Tor Cross, S. Devon, v.-c. 3, J. Chapple.

*32/6. Fumaria muralis Sond. " Near var. *decipiens* Pugsl., but with subrotund fruits "—hedgebank near Old Castle Farm, Cardigan, v.-c. 46, Lousley (1936 A, 196).

32/9. Fumaria Bastardi Bor. Paignton, S. Devon, v.-c. 3, Herb. G. H. Douglas in Torquay Museum, comm. G. T. Fraser.

32/10. Fumaria officinalis L. Stoke-in-Teignhead, and Berry Head, Brixham, S. Devon, v.-c. 3, G. T. Fraser.

32/10d. Fumaria officinalis L., var. Wirtgeni Hausskn. Wilbury Hill, Herts, v.-c. 20, J. Chapple.

*†32/13. Fumaria parviflora Lam. "Abnormal alien plants"—Burton-on-Trent, Staffs, v.-c. 39, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and C. Thomas.

32/13c. Fumaria parviflora Lam., var. Symei Pugsl. In *B.E.C. 1935 Rep.*, 22 (1936) the last sentence, " Add 'S' to *Comital Flora* but not N.C.R.," was misplaced and should have been printed under 32/5 *F. Boraei.*

†32/14. Fumaria agraria Lag. Malting alien, Burton-on-Trent, Staffs, v.-c. 39, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and C. Thomas.

†33/1. Matthiola incana Br. Add * for E. Kent, v.-c. 15, *B.E.C. 1935 Rep.*, 102 (1936).

†33/2. Matthiola sinuata Br. No mention is made in *C.F.* of the fact that this species was formerly native in W. and E. Cornwall, v.-cc. 1 and 2, but has long disappeared. It was introduced to Mullion Cliffs from seeds from Saunton, N. Devon (Davey, *Fl. Cornw.*, 29).—Ed. Two

small plants on cliff at Falmouth, W. Cornwall, v.-c. 1, Miss Hayman, ex Thurston (1936, 4).

*†34/1. Cheiranthus Cheiri L. An occasional escape, Kintyre, v.-c. 101, Latimer McInnes.

*35/2. Nasturtium sylvestre R. Br. Tal-y-Bont, Carnarvon, v.-c. 49 (J. D. Massey, *N.W. Nat.*, *11*, No. 3, 274).

†36/2. Barbarea verna Asch. Bank of R. Wye, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales [add to *Com. Fl.* but see *Welsh Flowering Plants* for previous record.—Ed.]. *Kintyre, v.-c. 101, once only, Latimer McInnes.

36/3b. Barbarea vulgaris Br., var. campestris Fr. Staverton, S. Devon, v.-c. 3, G. T. Fraser. Det. Kew.

36/3c. Barbarea vulgaris Br., var. transiens Dr. Abbotskerswell, S. Devon, v.-c. 3, T. Stephenson. Det. Kew.

36/4. Barbarea vulgaris Br., var. arcuata Fr. Canal bank, Teigngrace, and Abbotskerswell, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson. Confirmed by Kew.

*†36/5. Barbarea intermedia Bor. Christow, S. Devon, v.-c. 3, T. Stephenson. Confirmed by Kew.

†40/2. Lunaria annua L. St John, near Plymouth, E. Cornwall, v.-c. 2; Yealmpton, S. Devon, v.-c. 3, E. Masson Phillips.

*43/3. Draba incana L. Machrihanish and Dunaverty Golf Links, Kintyre, v.-c., 101, Latimer McInnes.

†43/4. Draba muralis L. "In a semi-wild bit of garden at Bosahan [W. Cornwall, v.-c. 1], where the only plant put in is a *Potentilla* from Winchester a few feet away," Miss C. Vivian, ex Thurston (1936, 5): cf. Rayner, *Supp. Fl. Hants*, 10 (1929) "in a nursery at Winchester, adventive, 1923, Jackson."—Ed.

†47/2. Hesperis matronalis L. Abundantly naturalised at Ledwyche Brook, Salop, v.-c. 40, W. H. Hardaker.

†49/3. Sisymbrium altissimum L. Exminster and Wolborough, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson.

†49/4. Sisymbrium orientale L. Keston Common, W. Kent, v.-c. 16; Boxhill, Surrey, v.-c. 17, P. H. Cooke; West Wycombe, Bucks, v.-c. 24, Bolton King.

49/6b. Sisymbrium officinale (L.) Scop., var. leiocarpum DC. Kingsteignton and Wolborough, S. Devon, v.-c. 3, G. T. Fraser.

†50/1. Erysimum cheiranthoides L. Arable ground, Marchwood Manor, S. Hants, v.-c. 11, H. J. Goddard. Det. Kew.

*54/5. Brassicella monensis (L.) O. E. Schulz. Woolacombe, N. Devon, v.-c. 4, 23rd June, 1909, W. T. Wainwright in Herb. Hiern, ex Pugsley (1936 D, 326).

54/14b. Brassica arvensis Kuntze, var. orientalis (L.) Aschers. Moretonhampstead, S. Devon, v.-c. 3, F. M. Day; Ogwell and Ashprington, S. Devon, v.-c. 3, G. T. Fraser; Sarratt, Hertfordshire, v.-c. 20, F. M. Day.

*†61/3. Lepidium Draba L. Askomil Walk roadside, Kintyre, v.-c. 101, Latimer McInnes. [No Scottish records are given in *C.F.* but many localities are recorded in Buchanan White's *Flora of Perthshire*, Hayward and Druce's *Adventive Flora of Tweedside*, J. R. Lee's *Flora of the Clyde Area*, etc.—R. H. Corstorphine.]

*†61/3b. Lepidium Draba L., var. subintegrifolium Mich. Near Plymouth, S. Devon, v.-c. 3, W. B. Waterfall, c. 1880; Odiham, N. Hants, v.-c. 12, C. C. Palmer, 1905; near Malpas, Monmouth, v.-c. 35, A. E. Wade [add to *Com. Fl.*, but see *Welsh Flowering Plants* for previous record.—Ed.]; Barry, Glamorgan, v.-c. 41, A. E. Wade. All comm. Dept. Bot., Nat. Mus. Wales. Det. A. E. Wade.

61/7c. Lepidium Smithii Hook., var. papillosum Dunn. Morpha Ponds, Glamorgan, v.-c. 41, Miss E. M. Thomas and Miss E. Vachell.

†61/24. Lepidium neglectum Thell. Dixton, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales. Det. A. E. Wade.

*†64/1. Thlaspi arvense L. Casual, Kintyre, v.-c. 101, Latimer McInnes.

†76/3. Rapistrum rugosum (L.) All. Hillingdon gravel-pits, Middlesex, v.-c. 21, P. H. Cooke.

77/1b. Cakile maritima Scop., var. sinuatifolia DC. Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser.

†85/1. Reseda alba L. Two plants near the sea front, Bude, E. Cornwall, v.-c. 2, Adams, ex Thurston (1936, 6).

88. Viola L. All the following except two, which are indicated, were determined by P. M. Hall.

88/1. Viola stagnina Kit. Still at West Dereham Fen, W. Norfolk, v.-c. 28, but decreasing through drainage and fires, J. E. Lousley and G. Watts; near Lincoln, N. Lincs, v.-c. 54, F. T. Baker.

88/3. Viola sylvestris Lam. Garryland demesne, S.E. Galway, v.-c. H. 15, P. M. Hall and N. D. Simpson.

88/4f. Viola Riviniana Reichb., f. villosa N.W. & M. Gap of Dunloe, S. Kerry, v.-c. H. 1, P. M. Hall and N. D. Simpson.

*88/6. Viola canina L. Common, Kintyre, v.-c. 101, Latimer McInnes. [Spec. non vidi, P.M.H.]

88/7. Viola lactea Sm. Heathy ground, near Three Castles Head, W. Cork, v.-c. H. 3/ by Cregduff L. and Bunowen Hill, *W. Galway, v.-c. H. 16/ P. M. Hall and N. D. Simpson. [*C.F.* makes no reference to Irish records, although *Irish Topographical Botany* gives records from W. Cork (Inchigeela) and Clare (Ballyvaghan). Praeger (1935) records it from v.-cc. H. 1-3, 9, but only repeats the two records previously noted and gives no details for Kerry (H. 1 and 2).—Ed.]

88/7×4. Viola lactea Sm. × Riviniana Reichb. Kit Hill, near Callington, E. Cornwall, v.-c. 2, E. Masson Phillips; heathy ground near Three Castles Head and Gortyowen, W. Cork, v.-c. H. 3, P. M. Hall and N. D. Simpson.

88/8g. Viola odorata L., var. sulphurea (Car.) R. & F. Patch by roadside, near Castle-an-dinas, Gulval, W. Cornwall, v.-c. 1, Rees, ex Thurston (1936, 6). [Spec. non vidi, P.M.H.]

88/9×8. Viola hirta L. × odorata L. Becca Banks, Aberford and Boston Spa, Mid-West Yorks, v.-c. 64, W. A. Sledge.

†88/13. Viola cornuta L. Grassy clearing in wood, far removed from any cultivation, Savernake Forest, N. Wilts, v.-c. 7, J. D. Grose.

*88/15. Viola variata Jord. Cultivated field, Llansantffraid, Anglesey, v.-c. 52, J. D. Grose.

88/15b. Viola variata Jord., var. sulphurea Drabble. Mellands, near Powderham, S. Devon, v.-c. 3, P. M. Hall and G. T. Fraser; Llansantffraid, Anglesey, v.-c. 52, J. D. Grose.

88/24. Viola segetalis Jord., f. obtusifolia (Jord.) Drabble. West Charlton and Prawle Point, S. Devon, v.-c. 3, J. Chapple; near Lairg, *E. Sutherland, v.-c. 107; Murkle, *Caithness, v.-c. 109, Miss E. S. Todd.

88/26. Viola ruralis Bor. Mellands, near Powderham, S. Devon, v.-c. 3, P. M. Hall and G. T. Fraser; field by Combe Wood, Oxon, v.-c. 23, J. Chapple.

88/27. Viola anglica Drabble. West Charlton, S. Devon, v.-c. 3, J. Chapple.

88/28. Viola Deseglisei Jord. Near Pangbourn, Berks, v.-c. 22, J. Chapple; cultivated field and heath, Penrhos Fedw, *Anglesey, v.-c. 52, J. D. Grose.

*88/31. Viola lepida Jord. Lairg, E. Sutherland, v.-c. 107, Miss E. S. Todd.

88/34. Viola lutea Huds., f. Curtisii (Forst.) Drabble. Aberffraw, Anglesey, v.-c. 52, J. D. Grose; Derrynane, S. Kerry, v.-c. H. 1, P. M. Hall and N. D. Simpson.

88/35. Viola lutea Huds., f. Mackaii (H. C. Wats.) Drabble. Aberffraw, Anglesey, v.-c. 52, J. D. Grose [add to *Com. Fl.*, but see *Welsh Flowering Plants* for previous record.—Ed.]; dunes at W. end of Lough Gill, near Castlegregory, S. Kerry, v.-c. H. 1, P. M. Hall and N. D. Simpson.

*89/2. Polygala vulgaris L. Common, Kintyre, v.-c. 101, Latimer McInnes.

†96/16. Silene dichotoma Ehrh. Waste ground, Ipswich, E. Suffolk, v.-c. 25, Miss E. Rawlins; Jersey Marine, Glamorgan, v.-c. 41, established and spreading, F. Norton and R. L. Smith.

98/3×4. Lychnis alba Mill. × dioica L. Dawlish Warren, Buckland-tout-Saints, and Thurlestone, S. Devon, v.-c. 3, G. T. Fraser.

100/2. Cerastium arvense L. Near Wendover, Bucks, v.-c. 24, new to the Thame district, J. Chapple, Sir Roger Curtis and D. B. Fanshawe.

100/4. Cerastium arcticum Lange. Aonach Beag, Westerness, v.-c. 97, E. C. Wallace.

100/4×5. Cerastium arcticum Lange × vulgatum L. Aonach Beag, Westerness, v.-c. 97, E. C. Wallace.

100/5l. Cerastium vulgatum L., var. pratense (Diard) Dr. Water meadows near Wareham Station, Dorset, v.-c. 9, J. E. Lousley and P. M. Hall.

100/9. Cerastium tetrandrum Curt. Milk Hill, N. Wilts, v.-c. 7, in considerable quantity, recorded from "Downs above Alton Barnes" by E. S. Marshall, 1904, perhaps the same locality, J. Chapple and J. D. Grose; Cambusavie, Loch Fleet, E. Sutherland, v.-c. 107; Coldbackie, Tongue, W. Sutherland, v.-c. 108, J. E. Lousley and J. E. Woodhead; cliffs at Dunbeath, Caithness, v.-c. 109, Miss E. S. Todd.

*101/6b. Stellaria Dilleniana Moench, var. palustris (Retz.) Dr. Near Mathry, Pembroke, v.-c. 45, B. Lloyd and C. Oldham, comm. Dept. Bot., Nat. Mus. Wales.

*102/1. Arenaria trinervia L. Glenramskil, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

102/3. Arenaria norvegica Gunn. The usual station visited by botanists near Inchnadamph, W. Sutherland, v.-c. 108, is the original one discovered by Gray (*Scot. Nat.*, ix, 93 (1887-8)), which is at an altitude of just over 200 feet, and where the plant occurs in extremely small quantity. Subsequently E. S. Marshall found a second station on limestone rocks at 1100-1200 feet, where the plant still occurs in good quantity. Marshall suggested that the real habitat was on the higher rocks, whence it had been washed down. The higher ground round Inchnadamph has not been well worked and it is highly probable that there are yet other stations for this rarity to be discovered in the district. In the meanwhile there is no excuse for gathering specimens in the all too accessible old station.—J. E. Lousley.

102/5b. Arenaria serpyllifolia L., var. viscidula Roth. Berry Head, Brixham and Bee Sands, Stokenham, S. Devon, v.-c. 3, G. T. Fraser; Barry, and near Laleston, Glamorgan, v.-c. 41, A. E. Wade, comm. Dept. Bot., Nat. Mus. Wales.

102/5c. Arenaria serpyllifolia L., var. stricta Towns. Penally, Pembrokeshire, v.-c. 45, Miss E. Vachell.

102/5d. Arenaria serpyllifolia L., var. macrocarpa Lloyd. Berry Head, Brixham and Bee Sands, Stokenham, S. Devon, v.-c. 3, G. T. Fraser.

102/8. Arenaria tenuifolia L. Kingskerswell, S. Devon, v.-c. 3, G. T. Fraser and Rev. T. Stephenson.

†102/14. Arenaria balearica L. Naturalised in several localities, Kintyre, v.-c. 101, Latimer McInnes.

103/2. Sagina subulata (Sw.) Presl. Burcombe, Simonsbath, S. Somerset, v.-c. 5, J. E. Lousley.

103/7b. Sagina filicaulis Jord. Garden weed, Oxted, Surrey, v.-c. 17, D. B. Fanshawe; chalk-pit, Guildford, Surrey, v.-c. 17, A. J. Wilmott.

103/8. Sagina apetala Ard. West Charlton, S. Devon, v.-c. 3, J. Chapple.

103/10. Sagina maritima Don. Frequent, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.* but not N.C.R., see *Top. Bot.*, ed. 2, 69,—Ed.]

*104/1. Spergula arvensis L. Common, Kintyre, v.-c. 101, Latimer McInnes. [*Top. Bot., Supp. i*, 20, gives "All" for *S. arvensis*, but did not at that time recognise the segregate *S. sativa*.—Ed.]

*104/2. Spergula sativa Boenn. Killean, Kintyre, v.-c. 101, Latimer McInnes.

105/1b. Spergularia rupicola Lebel, var. glabrescens (Lebel) Bréb. St Brelades, Jersey, J. Chapple [det. J. E. Lousley]; Skokholm I., Pembroke, v.-c. 45, R. M. Lockley, comm. Dept. Bot., Nat. Mus. Wales.

105/2×3. Spergularia marginata Kittel × salina Presl. Intermediate in general appearance between the two parents, flowers the size and colour of the first, winged seeds present but extremely scarce, sea-wall between Grain and Port Victoria, W. Kent, v.-c. 16, J. E. Lousley.

105/4. Spergularia Bocconei (Soleir.) Steud. Dixcart Bay, Sark, Channel Islands, G. C. Brown.

106/1. Polycarpon tetraphyllum L. Near Hugh Town, and also near Old Town, St Mary's, Isles of Scilly, v.-c. 1, possibly introduced with horticultural stock from Guernsey, or, less likely, brought in by natural agencies from the Lizard, which is about 35 miles distant and where it occurs in very small quantity, not noticed by Townsend, *Journ. Bot.*, 102 seq. (1864), J. E. Lousley; spontaneous in greenhouse, Layer Marney, *†N. Essex, v.-c. 19, Miss M. S. Campbell.

†107/1. Portulaca oleracea L. To record in *B.E.C. 1935 Rep.*, 25 (1936), add "Det. Kew."

†107(2). **Calandrinia** H.B.K.

†107(2)/1. **Calandrinia Menziesii** (Hook.) Torr. & Gr. In quantity in a stubble field on the cliffs between Dawlish and Dawlish Warren, S. Devon, v.-c. 3, 22nd June 1936, in association with *Lycopsis arvensis* L., *Spergula arvensis* L., *Chrysanthemum segetum* L., *Silene anglica* L., *Scleranthus annuus* L. and *Antirrhinum Orontium* L.; this plant produces a large quantity of seed, which is scattered by an explosive dehiscence of the capsule, hence it may be expected to establish itself in this locality, E. M. Phillips. Det. Kew—"a native of N. America and occasionally found as an alien in the British Isles."

*†108/1. Claytonia alsinoides Sims. Boscawen, Hea Moor, Penzance, W. Cornwall, v.-c. 1, Rees ex Thurston (1936, 8); Stoke Fleming, S. Devon, v.-c. 3, Miss Baker, comm. G. T. Fraser; occasionally as an escape, *Kintyre, v.-c. 101, Latimer McInnes.

*†108/2. Claytonia perfoliata Donn. Sandhills, Mablethorpe, N. Lincs, v.-c. 54, Miss D. Marsden, comm. Lady Davy; occasionally as an escape, *Kintyre, v.-c. 101, Latimer McInnes.

111/2. Elatine hexandra DC. Pond near Hatchett's Pond, Miss K. Pickard, and Hatchett's Pond, S. Hants, v.-c. 11, Lady Davy.

*112/1. Hypericum Androsaemum L. Site of a felled wood near Riding Mill (Eltringham: *Vasc.*, *22*, No. 4, 158), and near Stocksfield, S. Northumberland, v.-c. 67, G. W. Temperley.

112/7. Hypericum montanum L. Railway bank, opposite Dixton, and Garth Wood, near Monmouth, v.-c. 35, S. G. Charles; Saundersfoot, Pembroke, v.-c. 45, J. E. Arnett. Both comm. Dept. Bot., Nat. Mus. Wales.

112/9b. Hypericum pulchrum L., var. procumbens Rostr. Bolt Tail, Malborough; Lustleigh; Bee Sands, Stokenham, S. Devon, v.-c. 3, G. T. Fraser.

116/2. Lavatera cretica L. Still at Old Grimsby, Tresco, Isles of Scilly, v.-c. 1, but scarce, J. E. Lousley.

*†117/1. Malva moschata L. Occasional, always near cottage gardens, Kintyre, v.-c. 101, Latimer McInnes.

*†117/2. Malva sylvestris L. Occasional, always near cottage gardens, Kintyre, v.-c. 101, Latimer McInnes.

*†117/3. Malva neglecta Wallr. (*M. rotundifolia* L. sec. auct. angl.) Occasional, always near cottage gardens, Kintyre, v.-c. 101, Latimer McInnes.

†117/4. Malva pusilla Sm. St Martin's, Isles of Scilly, v.-c. 1, J. E. Lousley; a single plant as garden weed, Belford, *Cheviotland, v.-c. 68 (Hull: *Vasc.*, *22*, No. 4, 157).

*123/3. Tilia cordata Mill. Near Wylam (R. B. Cooke), and Whittle Dene, S. Northumberland, v.-c. 67, "considered likely to be a genuine native" (Heslop Harrison: *Vasc.*, *22*, No. 3, 112).

125/3b. Linum catharticum L., var. dunense Dr. Bee Sands, Stokenham, S. Devon, v.-c. 3, G. T. Fraser.

†127/2. Geranium versicolor L. Lane near Trematon Castle, E. Cornwall, v.-c. 2, E. Masson Phillips.

127/7. Geranium pyrenaicum Burm. f. Brixton and Elburton, S. Devon, v.-c. 3, E. Masson Phillips.

128/1. Erodium maritimum L'Hérit. Port du Moulin, Sark, Channel Islands, G. C. Brown.

132/1b. Oxalis Acetosella L., var. subpurpurascens DC. Dunsford and Bridford, S. Devon, v.-c. 3, G. T. Fraser.

*†132/2. Oxalis corniculata L. Dunstanburgh Castle, Cheviotland, v.-c. 68 (Hull: *Vasc.*, *22*, No. 4, 157).

†132/3. Oxalis stricta L. In allotments, Tanner's Lane, near Lymington, S. Hants, v.-c. 11, A. H. Carter, comm. J. E. Lousley.

137/1d. Euonymus europaeus L., var. leucocarpus Dr. A small bush with cream-coloured fruits, near Truro, Cornwall, v.-c. 1 or 2 (Nicholson, 1936).

†145/1(2). Lupinus arboreus L. Established in two places in Marazion Marsh, W. Cornwall, v.-c. 1, J. Donald Grose. Det. Kew.

†145/3. Lupinus luteus L. Well established and covering some acres between the links and the sea, St Andrews, Fife, v.-c. 85, P. H. Cooke.

†145/4. Lupinus angustifolius L. Arable ground, Broadheath, Worcester, v.-c. 37, W. H. Hardaker.

147/1b. Genista anglica L., var. subinermis R. & F. An t-Aonach, Cairngorm, Easterness, v.-c. 96, at about 1700 feet, J. E. Lousley.

149/2. Ulex Gallii Planch. Near Haslemere, Surrey, v.-c. 17: not admitted for Surrey by Salmon, though given by *C.F.* (Britton, 1936 B.).

149/2b. Ulex Gallii Planch., var. humilis Planch. Coast at Bolt Tail, Malborough, S. Devon, v.-c. 3, G. T. Fraser.

*151/2. Ononis repens L. Crochery Hill and Brunerican, Kintyre, v.-c. 101, Latimer McInnes.

151/2b. Ononis repens L., var. horrida Lange. Slapton Sands, S. Devon, v.-c. 3, Miss C. E. Larter, A. Crawshaw, and G. T. Fraser.

151/2c. Ononis repens L., var. maritima Dum. Slapton Sands, S. Devon, v.-c. 3, G. T. Fraser.

*151/3. Ononis spinosa L. La Gièvre de la Ville, Sark, new to the Channel Islands, G. C. Brown.

152/1. Trigonella ornithopodioides DC. Hollybed Common, Castlemorton, Worcester, v.-c. 37, F. M. Day.

†152/12. Trigonella hamosa L. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan, N. Y. Sandwith, and H. K. A. Shaw.

†153/3. Medicago sativa L. Mill Lane, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

†153/4. Medicago hispida Gaertn. Grangetown, Cardiff, Glamorgan, v.-c. 41, F. Norton and R. L. Smith. [Submitted under the name *M. polycarpa* Willd., which appears to be a synonym of *M. hispida* Gaertn., placed by Ascherson and Graebner under sub-sp. *microcarpa* Urban, which includes vars. *denticulata*, *apiculata*, and *confinis* of the British Plant List.—Ed.]

†153/4f. Medicago hispida Gaertn., var. confinis (Koch) Burnat. Quarry Moor, near Ripon, Mid-West Yorks, v.-c. 64, 1905, N. D. Simpson. Det. G. Sirjaef.

†153/4j. Medicago tuberculata Willd. Knapp Mill, Christchurch, S. Hants, v.-c. 11, 1923, N. D. Simpson. Confirmed by G. Sirjaef.

153/5. Medicago arabica Huds. Very luxuriant by stream, Plaxtoe, W. Kent, v.-c. 16, E. C. Wallace.

†153/5b. Medicago arabica Huds., var. longispina Rouy. Railway yard, Weymouth, Dorset, v.-c. 9, N. D. Simpson. Confirmed by G. Sirjaef.

153/6f. Medicago minima (L.) Desr., forma viscida (Koch). Littlestone, E. Kent, v.-c. 15, N. D. Simpson.

*153/7. Medicago lupulina L. Waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

153/7b. Medicago lupulina L., var. scabra S. F. Gray. Coombe Martin, N. Devon, v.-c. 4, 1933; Mudeford, S. Hants, v.-c. 11, 1920; Craigmillar, Edinburgh, v.-c. 83, 1921, N. D. Simpson. Confirmed by G. Sirjaef.

*154/1. Melilotus altissima Thuill. Sporadic, Kintyre, v.-c. 101, Latimer McInnes.

*154/3. Melilotus arvensis Wallr. Waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

†154/4. Melilotus indica (L.) All. Delete * for v.-c. 13, *B.E.C. 1935 Rep.*, 26 (1936), see *J.B.*, 14 (1906).

*†155/4. Trifolium incarnatum L. Occasional, Kintyre, v.-c. 101, Latimer McInnes.

155/7c. Trifolium arvense L., var. perpusillum Ser. Exmouth and Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser.

155/8. Trifolium squamosum L. Near Crinnis beach, E. Cornwall, v.-c. 2, Tresidder ex Thurston (1936; 11). [V.-c. 2 is bracketed in *C.F.* Davey, *Fl. Cornw.*, 119, says "Native?" Further information as to the status of the species in Cornwall is desirable.—Ed.]

155/11b. Trifolium striatum L., var. erectum Gaspar. Ashburton and Drewsteignton, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson.

*155/14. Trifolium strictum L. Stanner Rocks, Radnorshire, v.-c. 43. Discovered independently by F. M. Day and W. H. Hardaker. [A very remarkable extension of range and one must suppose a recent arrival in this locality. Were seeds transported accidentally by human agency from The Lizard? There is an unconfirmed record for Anglesey not referred to in *Comital Flora*.—Ed.]

*†155/15. Trifolium hybridum L. Occasional, Kintyre, v.-c. 101, Latimer McInnes.

*†155/19. Trifolium agrarium L. Brixham and Ogwell, S. Devon, v.-c. 3, G. T. Fraser.

160/6. Lotus tenuis W. & K. Shingle, Midrips near Lydd, E. Kent, v.-c. 15, E. C. Wallace.

†165/1. Colutea arborescens L. A magnificent clump on waste ground near Rainham, S. Essex, v.-c. 18, J. E. Lousley and R. Melville.

166/3. Astragalus danicus Retz. in Wiltshire.

Astragalus danicus was first recorded for Wiltshire by T. B. Flower in 1863 (*Wilts. Arch. and Nat. Hist. Mag.*). It was first observed by Dr Southby (c. 1860) near Bulford, and shortly afterwards by Miss Talbot " on the downs between Netheravon and Tidworth, growing in large patches." This may possibly refer to the same station. Flower himself saw the plant near Upavon in 1861, and it was gathered near Netheravon by F. Raikes in 1876. These localities form an area of about 15 square miles on the eastern border of Wiltshire; and very probably the plant does not now exist outside this district in the county.

There is an old record by T. Coward for Roundway, near Devizes in North Wilts, but it has never been verified, although the district has been well explored. This record, therefore, must remain doubtful.

Preston's *Flowering Plants of Wilts*," published in 1888, gives no further information, and the listed stations are bracketed as never having been confirmed. Indeed, the plant does not seem to have been seen again in Wiltshire for over fifty years.

The following note was published in *B.E.C. 1928 Rep.*:—" *Astragalus danicus* Retz. Near Swindon; between Amesbury and Salisbury Wilts. Rev. G. Gwatkin and Rev. E. H. Goddard."

The reference to Swindon is misleading, as it refers only to Canon Goddard's garden at Clyffe Pypard, where a few roots were transplanted. The native station is some miles south of those already mentioned, but by 1934 the small patch had completely disappeared owing

to destruction of the turf. It was Canon Goddard's intention to restart the species in its old home, but I do not think this has been done.

In December 1933, Mr E. W. M. Magor noticed what, by the leaves, he thought must be *A. danicus* growing on the down above Bulford. Through his kindness I was able to visit the spot in 1936, and to find several plants in flower. This, I think, is probably Dr Southby's original locality.

In Wiltshire, *A. danicus* reaches its most southerly British limit. It is an undoubted native in the county, and its present scarcity is probably due in part to the extensive shelling and trenching to which the military authorities subject its headquarters.

Mr P. M. Hall has long expressed the opinion that *Astragalus danicus* should occur in the extreme north-west corner of Hants—the only district in Hants where *Geranium pratense* is found frequently.

There is an old record in Smith-Pearse's *Handlist of Flowering Plants of Marlborough* for "downs near Tidworth." More recently the Marlborough College Natural History Society's Report for 1907 gives "A few scattered patches of this handsome vetch were found by C. C. Foss, Esq., on downs round Tidworth." It was again found near Tidworth by Mr M. C. Halton in 1921. North Tidworth is in Wiltshire and South Tidworth in Hants, but the hills near South Tidworth seem to be the more likely habitat for the plant. Thus it is probable that these records, or some of them, refer to Hampshire.

In 1926, Mr E. W. M. Magor saw the plant in very small quantity on the downs behind Shipton Bellinger. An extended search was made here in 1936 in company with Messrs P. M. Hall and E. C. Wallace, but without success. Both Tidworth and Shipton Bellinger are within two or three miles of the Wiltshire locality where the species still exists. Mr Magor's station was almost certainly within the Hampshire border and it is hoped that renewed efforts to find the plant in Hants will be rewarded with success in 1937.—J. D. Grose.

*†170/1. Coronilla varia L. Once only, waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

171/2. Ornithopus perpusillus L. Near Stargate Colliery, Durham, v.-c. 66 (Eltringham: *Vasc.*, *22*, No. 4, 158; recorded as from v.-c. 67, for which it would have been N.C.R., but, *teste* G. W. Temperley, the locality is in v.-c. 66).

†176/2. Vicia tenuifolia Roth. Jersey Marine, Glamorgan, v.-c. 41, thoroughly established and spreading, F. Norton and R. L. Smith.

176/8b. Vicia sepium L., var. ochroleuca Bast. Peterston-super-Ely, Glamorgan, v.-c. 41, E. P. Perman, comm. Dept. Bot., Nat. Mus. Wales.

†177/3. **Ervum orientale** Boiss., *Diagn.*, ser. i, 9, p. 115; *Fl. Orient.*, ii, 598. Alien from the Orient. Waste ground, Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan and N. Y. Sandwith. Det. N. Y. Sandwith.

*†178/3. Lathyrus tuberosus L. In a thicket between Farnham and Godalming, Surrey, v.-c. 17, since 1928, W. E. Warren. Det. W. H. Pearsall, who stated in a note:—" the late C. E. Salmon saw and named this in 1928 but it was not included in the *Flora of Surrey*, as *Lathyrus* was already in print."

178/4. Lathyrus maritimus Bigel. A note in the *Western Morning News* in July 1936 stated that a specimen of this plant had been found on a beach near St Keverne, W. Cornwall, v.-c. 1, by Miss K. Sobey, and that Miss K. M. Goad, who acts as referee for plants to the *W.M. News* office, had confirmed the naming. Mr E. A. Rees, of Penzance, tells me that he has seen the plant (a single bushy specimen) *in situ* and that it is certainly *L. maritimus*. The only previous record for the species in Cornwall is " on the beach near Penzance," Gibson, *Camden's Britannica*, ed. 2, 1722.—F. Rilstone. [This confirmation of an old record after a lapse of more than 200 years is of great interest. Gibson's record is referred to in Davey's *Flora of Cornwall* with the comment " extinct." *Top. Bot.*, ed. 2, brackets the record for v.-c. 1 as " dubious," while *Comital Flora* ignores it. There is no reference to *L. maritimus* in the paper by Thurston, *B.E.C. 1933 Rep.* (1934), 555, " Addenda and Corrigenda to the *Comital Flora*," which dealt almost entirely with Cornish records.—Ed.]

183/4. Prunus Cerasus L. Common in hedges, two miles south of Maryborough, Leix, v.-c. H. 14, P. M. Hall and N. D. Simpson.

183/7b. Prunus spinosa L., var. fruticans Weihe. Kingsbridge, Kingskerswell and Brixham, S. Devon, v.-c. 3, G. T. Fraser.

†185/38. Rubus laciniatus Willd. Sandpit, Wareham, Dorset, v.-c. 9, J. E. Delhanty.

†185/159. Rubus phoenicolasius Maxim. To record in *B.E.C. 1935 Rep.*, 28 (1936), add " Det. Kew."

187/2×1. Geum rivale L. × urbanum L. = × intermedium Willd. Greywell, N. Hants, v.-c. 12, J. E. Lousley; Fernhill Wood and Ebnal Lane, Gobowen, Oswestry, Salop, v.-c. 40 (Lloyd: *N.W.Nat.*, *11*, No. 1, 56).

†188/1. Fragaria moschata Duchesne. Totnes and Edginswell, Torquay, S. Devon, v.-c. 3, G. T. Fraser.

189/3b. Potentilla anserina L., var. nuda S. F. Gray. Sandhills, Thurlestone, S. Devon, v.-c. 3, G. T. Fraser.

189/3d. Potentilla anserina L., var. sericea Hayne. Sandhills, Thurlestone, S. Devon, v.-c. 3, G. T. Fraser. [Synonymous with var. *concolor* Wallr. of the *Br. Pl. List*, but Hayne's name is the earlier.—Ed.]

189/7b. Potentilla reptans L., var. microphylla Tratt. Sharkham, Brixham, S. Devon, v.-c. 3, G. T. Fraser.

189/8. Potentilla procumbens L. Clachan and Southend, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.*, but not N.C.R., see *Top. Bot., Supp.* i, 32.—Ed.]

†189/13. Potentilla recta L. Near Burford, Oxon, v.-c. 23, Lady Severn; waste ground, Campbeltown, Kintyre, v.-c. 101, once only, Latimer McInnes.

†189/17. Potentilla intermedia L. Grangetown, Cardiff, Glamorgan, v.-c. 41, quite established, F. Norton and R. L. Smith; road-side, Leuchars, Fife, v.-c. 85, 1914, Miss E. S. Todd.

190/2. Alchemilla pratensis Schmidt. River bank, Caher Lower, Clare, v.-c. H. 9; left bank of R. Shannon, Lanesborough, Longford, v.-c. H. 24, N. D. Simpson and P. M. Hall.

190/4. Alchemilla minor Huds. Railway bank near Oaksey Halt, N. Wilts, v.-c. 7, P. M. Hall and N. D. Simpson; roadside near Muckle Moss,* S. Northumberland, v.-c. 67 (Cooke and Heslop Harrison: *Vasc., 22*, No. 4, 156); near Newcastle West, Limerick, v.-c. H. 8, P. M. Hall and N. D. Simpson.

*190/19. Alchemilla alpina L. Glenlussa and Mull Gap, Kintyre, v.-c. 101, Latimer McInnes.

191/2. Agrimonia odorata (Gouan) Mill. Small wood, near Breamore Wood, S. Hants, v.-c. 11, N. D. Simpson.

†193/2. Poterium polygamum W. & K. Field-side bank between Headley and Boxhill, Surrey, v.-c. 17, P. H. Cooke.

*194/2h. Rosa arvensis L., var. gallicoides (Déségl.) Crép. Beckhole, N.E. Yorks, v.-c. 62, H. Britten, comm. W. A. Sledge. Det. A. H. Wolley-Dod.

194/10. Rosa dumetorum Thuill. Add * for Orkney, v.-c. 111, *B.E.C. 1935 Rep.*, 71 (1936).

194/13. Rosa coriifolia Fr. Add * for Mid-west Yorks, v.-c. 64, *B.E.C. 1935 Rep.*, 74 (1936); add * for West Perth, v.-c. 87, *loc. cit.*, 76; add * for Elgin, v.-c. 95, *loc. cit.*, 75.

194/14d. Rosa micrantha Sm., var. operta Pug. Near Nottage, Glamorgan, v.-c. 41, Miss M. Thomas. Det. A. H. Wolley-Dod.

194/15a. Rosa rubiginosa L., var. typica W.-Dod towards f. Corstorphinae Druce. Flodigarry, Skye, v.-c. 104, Miss E. Vachell. Det. A. H. Wolley-Dod.

194/19. Rosa tomentosa Sm. Add * for Derby, v.-c. 57, *B.E.C. 1935 Rep.*, 78 (1936).

*195/10. Sorbus porrigens Hedlund. Specimens in Torquay Herb. from Torquay, 1847, C. E. Parker, and from Babbacombe, *n.d.*, Miss C. E. Larter, as "*P. rupicola*, Devonshire form," belong here, *teste* A. J. Wilmott, comm. G. T. Fraser.

195/14. Sorbus latifolia Lam. agg. Little Haldon, near Bishopsteignton, S. Devon, v.-c. 3, G. T. Fraser, P. M. Hall, and T. Stephenson, previously recorded from this locality by Torquay botanists as *S. Aria*. Det. A. J. Wilmott as belonging to this aggregate.

†197/2. Cotoneaster microphylla Wallich. A solitary plant on open hillside, Foxcote Hill, E. Gloster, v.-c. 33, Miss L. Abell.

†197/8. **Cotoneaster thymifolia** Host. Gatcombe Hill, N. Wilts, v.-c. 7, in quite a wild spot, probably bird-sown, J. D. Grose. Det. Kew.

*†199/17. Saxifraga granulata L. Roadside hedge, Charlestown, E. Cornwall, v.-c. 2, Tresidder, ex Thurston (1936, 19)—"no sign of being a garden escape." [In view of the fact that *Sedum album* is recorded on the same page, also from "roadside hedge, Charlestown," though it is not stated to be the same hedge, it is probably wise not to regard this species as a native of Cornwall at the present time.—Ed.]. Laneside, N. Sydmonton Common, N. Hants, v.-c. 12, J. E. Lousley; Hurstmonceux churchyard, E. Sussex, v.-c. 14, E. C. Wallace (f. *flore pleno*); Petty France Farm, Wellington Heath, Hereford, v.-c. 36, F. M. Day.

199/19. Saxifraga rivularis L. Abundant on earthy slopes, Aonach Beag, Westerness, v.-c. 97, R. Mackechnie and E. C. Wallace.

Robertsonian Saxifrages. The following were determined by H. W. Pugsley.

199/24(2). Saxifraga spathularis Brot. Near Church Cove (also a form with pure white flowers and an apetalous form) and Gap of Dunloe, S. Kerry, v.-c. H. 1; near Ballyrisode House, Glengarrif, W. Cork, v.-c. H. 3; Mallarranny, W. Mayo, v.-c. H. 27, P. M. Hall and N. D. Simpson. These have been selected from a larger number of gatherings as ± typical.

199/24(2)b. Saxifraga spathularis Brot., var. serratifolia (Don) Pugsl. Many gatherings were determined as approaching this var.: the following are selected as coming nearest to it:—Connor Hill Pass, Dingle Peninsula, S. Kerry, v.-c. H. 1; near Clifden, W. Galway, v.-c. H. 16; Lugnaquilla, Wicklow, v.-c. H. 20, P. M. Hall and N. D. Simpson.

199/25. Saxifraga lactiflora Pugsl. Between Cloghane and Mullaghveale, west of Mullaghveale, Connor Hill Pass, all Dingle Peninsula, S. Kerry, v.-c. H. 1; Glengarrif, W. Cork, v.-c. H. 3, P. M. Hall and N. D. Simpson. The Robertsonian Saxifrages hybridise so freely that it is very difficult to find pure colonies. Of the above, Ref. No. (P.M.H.) 1703 from W. of Mullaghveale, was named "good *lactiflora*," while all the other gatherings contained some plants "nearly pure *lactiflora*."

199/25×24(2). =×Saxifraga hirsuta L. *sensu lato*. Between Cloghane and Mullaghveale, S. Kerry, v.-c. H. 1; Glengarrif, W. Cork, v.-c. H. 3, P. M. Hall and N. D. Simpson.

199/25×24(2)b. Saxifraga lactiflora Pugsl. × spathularis Brot., var. serratifolia (Don) Pugsl. "Cf. this hybrid." [Ref. No. (P.M.H.) 1690a], Connor Hill Pass, S. Kerry, v.-c. H. 1, P. M. Hall and N. D. Simpson.

211/1b. Sedum Telephium L., subsp. Fabaria (Koch) Schinz & Keller. Dale, Pembroke, v.-c. 45, E. P. Perman, comm. Dept. Bot., Nat. Mus. Wales.

*213/2. Drosera longifolia L. Gortein Moss, Kintyre, v.-c. 101, Latimer McInnes.

†215/2. **Gunnera peltata** Phil. Near Coverack, W. Cornwall, v.-c. 1, escaped from nearby gardens, but now spreading for some distance along the roadside, J. Donald Grose. Det. Kew.

217/5. Callitriche intermedia G. F. Hoffm. Glenlussa, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.*, but not N.C.R., see *Top. Bot., Supp.* i, 38.—Ed.]

217/7b. Callitriche truncata Guss., var. occidentalis (Rouy) Dr. Ditch in the Arun valley, near Arundel, W. Sussex, v.-c. 13, E. C. Wallace. [An exceptionally interesting record, recorded by Borrer from Amberley in 1829, but there has been no recent Sussex record.—Ed.]

220. Epilobium L. All the following were determined by G. M. Asu, who has also examined the material in Herb. Druce, necessitating the corrections indicated.

220/3. Epilobium hirsutum L. Ref. No. 2145, Westcott, Surrey, v.-c. 17, and Ref. No. 2138, Ockham, Surrey, v.-c. 17, C. E. Britton, as *hirsutum* × *parviflorum*, *B.E.C. 1919 Rep.*, 820 (1920); Kilsby, Northants, v.-c. 32, L. Cumming, as *hirsutum* × *montanum*, *B.E.C. 1915 Rep.*, 266 (1916) (delete record in *Fl. Northants*, p. 93).

220/3×4. Epilobium hirsutum L. × parviflorum Schreb. Bank of Cherwell, Marston Meadows, Oxon, v.-c. 23, J. Chapple (a very

small-flowered plant with flowers no larger than ordinary *parviflorum*: *hirsutum* in this locality is also abnormally small-flowered); Groby quarry, near Leicester, v.-c. 55, G. M. Ash and J. Chapple; Silverdale, N. Lancs, v.-c. 69, with wholly female flowers, International Phytogeographical Excursion in the British Isles, 1911.

220/3×5. Epilobium hirsutum L. × tetragonum L. Groby quarry, near Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/3×10. Epilobium hirsutum L. × montanum L. Castle Coch Woods, Glamorgan, v.-c. 41, Miss E. Vachell; Groby quarry, near Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/4. Epilobium parviflorum Schreb. Marston, Oxon, v.-c. 23, G. C. Druce, 1888, as *lanceolatum* × *parviflorum*; Farthinghoe, Northants, G. C. Druce, 1911, as *parviflorum* × *roseum* (delete Farthinghoe record from *Fl. Northants*, p. 94); Symond's Yat, W. Gloster, v.-c. 34, S. H. Bickham, as *adnatum* × *parviflorum*, *B.E.C. 1905 Rep.*, 171 (31), (1906); Derbyshire, v.-c. 57, A. R. S. Proctor, as *montanum* × *parviflorum*, *B.E.C. 1928 Rep.*, 738 (1929).

220/4×5. Epilobium parviflorum Schreb. × tetragonum L. em. Curt. Chalk pit, near Guildford, Surrey, v.-c. 17; Groby quarry, near Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/4×8. Epilobium parviflorum Schreb. × roseum Schreb. Near Amberley, W. Sussex, v.-c. 13, G. C. Druce, as *lanceolatum* × *parviflorum* (*teste* E. S. Marshall), "a new hybrid to Britain," *B.E.C. 1918 Rep.*, 284 (1919); by the R. Ouzel, Salford, Bucks, v.-c. 24, and Beds, v.-c. 30, G. C. Druce, 1896, as *montanum* × *parviflorum*.

220/5. Epilobium tetragonum L. em. Curt. Bovey Tracey, S. Devon, v.-c. 3, (f. *minor*); S. Hayling, S. Hants, v.-c. 11, P. M. Hall.

220/6. Epilobium Lamyi F. Schultz. Swithland Wood, Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/6. Epilobium Lamyi F. Schultz, f. annua. Odiham, N. Hants, v.-c. 12, 1897, Miss C. E. Palmer. See *B.E.C. 1897 Rep.*, 547 (1898), where E. S. Marshall names it "a small (probably shade-grown) seedling state of *E. parviflorum* Schreber."

220/6×10. Epilobium Lamyi F. Schultz × montanum L. Henley, Oxon, v.-c. 23, 1924, G. C. Druce, as "? *montanum* × *obscurum*." New to Oxfordshire.

220/7. Epilobium obscurum Schreb. St Saviour's Valley, Jersey, 1850, J. Piquet, as *palustre*; Kingsbridge, S. Devon, v.-c. 3, 1858, Hb. Lightfoot, as *palustre*; Melmerby, Cumberland, v.-c. 70, 1920, W.

Wright Mason; Banks of Tweed, Melrose, Roxburgh, v.-c. 80, 1883, C. E. Palmer, as *palustre*.

220/7×4. Epilobium obscurum Schreb. × parviflorum Schreb. Abbotskerswell, S. Devon, v.-c. 3, T. Stephenson; Tor Cross, S. Devon, v.-c. 3, J. Chapple; S. Hayling, S. Hants, v.-c. 11, P. M. Hall; near Tilford, Surrey, v.-c. 17, 1890, E. S. Marshall, as *montanum* × *obscurum*, near the latter; Sunningwell, Berks, v.-c. 22, 1893, G. C. Druce, as *adnatum* × *parviflorum*; Banbury, T. Beesley in Herb. Druce, and Shotover Bog, J. Chapple, both Oxon, v.-c. 23; Swithland Reservoir, Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/7×14. Epilobium obscurum Schreb. × palustre L. Peakirk, Northants, v.-c. 32, 1913, G. C. Druce, as *palustre*. New to Northants.

*220/7(2). Epilobium adenocaulon Haussk. Portishead Dock, N. Somerset, v.-c. 6, J. P. M. Brenan and N. Y. Sandwith; Crab Wood, Winchester, S. Hants, v.-c. 11, Rev. H. Purefoy Fitzgerald, comm. P. M. Hall; Tonbridge Tip, W. Kent, v.-c. 16, J. P. M. Brenan; ditch in alluvial flats near Dagenham, S. Essex, v.-c. 18, N. Y. Sandwith; Avonmouth Dock, W. Gloster, v.-c. 34, 1935, Mrs C. I. Sandwith. In *Journ. Bot.*, *73*, 328, 1935, I reported the finding of a specimen of this species in Herb. Druce under the name of *E. obscurum* × *roseum* from Cropstone reservoir, Leicester, 1894. This proved to be the earliest known record from Britain. Curious to know whether it still existed there, in company with Mr G. M. Ash, I paid a visit to Cropstone at the end of August 1936, and after a considerable search around the reservoir we came across a few plants of *E. adenocaulon* scattered over a limited area. It is evidently not nearly so plentiful as it was in 1894, when it is described as forming the most conspicuous part of a vast belt of *Epilobium* on the muddy shores left dry by the receding water. We, however, found the reservoir very full of water and the few willow-herbs there were growing among the reeds and rushes. On the disused sluice-way of Swithland reservoir—about three miles from Cropstone in a straight line—one or two plants of *E. adenocaulon* were also found. —John Chapple.

220/7(2)×10. Epilobium adenocaulon Hausskn. × montanum L. Crab Wood, Winchester, S. Hants, v.-c. 11, Rev. H. Purefoy Fitzgerald, comm. P. M. Hall.

220/8. Epilobium roseum Schreb. Exeter, S. Devon, v.-c. 3, 1908, G. C. Druce, as *parviflorum* × *roseum*; Headington, Oxon, v.-c. 23, 1915, G. C. Druce, as *parviflorum* × *roseum*; grounds of Ruthin Castle, Denbigh, v.-c. 50, 1925, L. Cumming, as *montanum*.

220/9. Epilobium lanceolatum S. & M. In several places and in some quantity in and about Tor Cross, and at Blackpool, S. Devon, v.-c. 3, J. Chapple.

220/9×7. Epilobium lanceolatum S. & M. × obscurum Schreb. Tor Cross, S. Devon, v.-c. 3, J. Chapple.

220/9×10. Epilobium lanceolatum S. & M. × montanum L. Near St Andrew's, Guernsey, 1906, G. C. Druce, as *lanceolatum* × *obscurum*; Falmouth, W. Cornwall, v.-c. 1, 1911, G. C. Druce, as *lanceolatum*; garden weed, Polperro, E. Cornwall, v.-c. 2, 1924, F. Rilstone, distributed as *lanceolatum*, but one of the plants in Herb. Druce is this hybrid.

220/10×4. Epilobium montanum L. × parviflorum Schreb. Woodbury and Kingskerswell, S. Devon, v.-c. 3, T. Stephenson; Tor Cross, S. Devon, v.-c. 3, J. Chapple; Groby quarry, Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/10×7. Epilobium montanum L. × obscurum Schreb. Tor Cross, S. Devon, v.-c. 3, J. Chapple; Rake, W. Sussex, v.-c. 13, E. C. Wallace; Valley of the Jed, Roxburgh, v.-c. 80, 1909, H. E. Fox, as *montanum*.

220/10×8. Epilobium montanum L. × roseum Schreb. Swithland Wood, Leicester, v.-c. 55, G. M. Ash and J. Chapple.

220/12. Epilobium alsinifolium Vill. Above Loch Maolach-Coire, Inchnadamph, W. Sutherland, v.-c. 108, J. E. Lousley.

220/14×4. Epilobium palustre L. × parviflorum Schreb. Hickling, E. Norfolk, v.-c. 27, Miss E. S. Todd.

*†223/2. Oenothera Lamarkiana Seringe. Dawlish Warren, Wolborough, Abbotskerswell, Torquay and Coffinswell, S. Devon, v.-c. 3, G. T. Fraser and W. Keble Martin.

†224(2). **Gaura** L., *Gen. Pl.*, ed. v, p. 163, No. 425 (1754).

†224(2)/1. **Gaura coccinea** L. Pembrey Burrows, Carmarthen, v.-c. 44, G. W. Hollis, comm. Dept. Bot., Nat. Mus. Wales, see *B.E.C. 1935 Rep.*, 175 (1936). Native of N. America. Det. H. A. Hyde.

225/2. Circaea canadensis Hill. Trislaig, Ardgour, Westerness, v.-c. 97, E. C. Wallace. [Add to *Com. Fl.*, but see *Top. Bot., Supp.* i, 36, for previous record.—Ed.]

†234/1. Carpobrotus edulis (L.) N. E. Br. Abundant by railway at Dawlish and increasing rapidly, S. Devon, v.-c. 3, G. T. Fraser.

†234/1b. Carpobrotus edulis (L.) N. E. Br., var. rubescens Dr. Abundant on Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser.

†236/1. Tetragonia expansa Murr. Gravel pits, Petersham, Surrey, v.-c. 17, P. H. Cooke.

†239/1. Eryngium campestre L. A small colony of 3 or 4 plants, Hope's Nose, Torquay, S. Devon, v.-c. 3, 1934, G. T. Fraser. In the Plymouth district during 1935 and 1936 *Eryngium campestre* L. was found by several observers to be flourishing and spreading at Devil's Point, Stonehouse, Plymouth. This is very pleasing, because in the Floras of the latter part of the last century it was said to be " nearly extinct " at this well-known station. On 20th July 1935, it was recorded by Mr G. W. Copeland as growing in fair quantity on an artificial bank (gun emplacement) at Devil's Point. I saw it in the same place on 24th July, but on 19th August I found that the lush vegetation on the bank had all been cut (prior to firing practice) and the *Eryngium* had been cut right down to the roots. However, in 1936, it had recovered, and on 8th July it was growing as strongly as before. Furthermore, I then discovered a large number of plants growing on the extreme edge of the limestone cliffs above the sea, and there seems to be no reason why the plants should not persist indefinitely in this natural habitat, although the other plants on the bank may finally be exterminated by cutting on the occasion of each firing practice. On 26th July 1936, *Eryngium campestre* L. was found on the cliffs at Bovisand, near Plymouth, by Mr E. W. Clarke. I saw it in this station on 1st August, and there was a large number of plants forming two patches separated by a narrow cliff-top path. Bovisand is in Wembury parish, and it is uncertain whether the above is the same station as " between Wembury and Bovisand," whence the plant was recorded in 1908.—E. Masson Phillips.

244/1. Smyrnium Olusatrum L. Growing in a hedge along the road from Newport Pagnell to Bletchley, Bucks., v.-c. 24, some 3½ miles from Fenny Stratford, Sir R. Curtis. In *Fl. Bucks*, 150, it is stated " this appears to be now extinct."

†245/1. Bupleurum fruticosum L. Abundant on both sides of a railway cutting, near Horton Kirkby, W. Kent, v.-c. 16 (Britton, 1936 C).

247/6. Apium Moorei (Syme) Dr. Pool in limestone pavement, left bank of R. Shannon, Lanesborough, Longford, v.-c. H. 24, P. M. Hall and N. D. Simpson. [The distribution given for this and many other Irish plants in *Com. Fl.* is imperfect; the up-to-date figures are given in Praeger (1935).—Ed.]

†252/1. Falcaria vulgaris Bernh. Littleham and Churston Ferrers, S. Devon, v.-c. 3, 1934, E. Milton, comm. G. T. Fraser; edge of grass field, Hayes, W. Kent, v.-c. 16, D. McClintock.

255/2. Pimpinella Saxifraga L., with red flowers, perhaps var. roseiflora Drabble. Downs above Eastbourne, E. Sussex, v.-c. 14, E. C. Wallace.

259/1. Scandix Pecten-veneris L. Very small, in aboriginal downland turf, Birling Gap, E. Sussex, v.-c. 14, J. E. Lousley.

*†263/1. Foeniculum vulgare Mill. An escape, Kintyre, v.-c. 101, Latimer McInnes.

265/3. Oenanthe crocata L. Pin Mill, between Ipswich and Shotley, E. Suffolk, v.-c. 25, Miss E. Rawlins. Det. W. H. Pearsall. [Add to *C.F.*, given for v.-c. 25, in *Top. Bot.*, ed. 2, 197, without personal authority.—Ed.]

265/4. Oenanthe pimpinelloides L. Woking, Surrey, v.-c. 17, W. E. Warren; given as "excessively rare" by Salmon, *Fl. Surrey*, 346. Det. W. H. Pearsall and A. J. Wilmott.

277/2b. Heracleum Sphondylium L., var. angustifolium Huds. Greatham, Cockenford, Birtley, Lanchester, etc., Durham, v.-c. 66, Heslop Harrison (1936 A).

†279/1. Coriandrum sativum L. Young specimens of this scarce alien from Sandwich Bay, E. Kent, v.-c. 15, were brought to me by Mr A. H. Carter, and on August 16th, 1936, I visited this station in the company of Mr E. C. Wallace. The plant was extremely inconspicuous being very small (tallest specimen 22 cm. in fruit) and growing along the edge of the marram grass amongst debris cast up by the highest tides. Many specimens in full flower still had the cotyledons attached and not shrivelled. Taking Mr Carter's observations in conjunction with our own, Coriander evidently occurred along approximately a ¼ mile of shore, and there were probably at least a hundred plants. From the situation in which it was growing the seeds must have floated in from the sea, and may well have come from a shipwreck on the Goodwin Sands. There are three other British records from similar situations as follows:—(1) Shore between Clontarf and Howth, Dublin, v.-c. H. 21, W. Wade in *Plantae rariores in Hibernia inventae*, 1804). (2) Under the cliff below Shoebury Church, S. Essex, v.-c. 18, 1804, Edw. Forster in Hb. Mus. Brit. (3) Shingly beach near Netley, S. Hants, v.-c. 11, "seemed well established," 1874, H. & J. Groves in Hb. Mus. Brit. Although omitted from Druce's *Comital Flora* the plant has a long history in Britain, and is worthy of retention in our lists. *Coriandrum sativum* is on record from the following vice-counties:—6, 10, 11, 15, 16, 17, 18, 20, 21, 24, 25, 29, 32, 37, 41, 53, 55, 58, 59, 63, 64, 66, 67, 80; C.I.; H. 8, 21, 39. In some of these it has been a mere casual, in others a relic of cultivation, and in Surrey and S. Essex it has become established for a period. Coriander was widely cultivated from very ancient times for the use of the fruit as a flavouring and as a carminative, and although there is reason to believe that it is a native of the Levant, it has become so widely and completely naturalised throughout the Mediterranean region that its true distribution as a native plant is obscure. In this country it was formerly well known in cultivation,

and was included by almost all the authors of our older floras as an "escape"—usual habitats being pathsides, arable fields, and village rubbish-dumps. In more recent times it was cultivated in Essex and thus we find it given as a not uncommon Essex plant about Althorne, Canewdon, etc., in *Essex Naturalist*, iii, 277, 1889. At Mitcham, Surrey, which was long a centre for the cultivation of plants used in confectionery, perfumery and medicine the plant persisted for many years. The earliest Mitcham specimen in my herbarium is dated 1916, but since the Herb industry was then long past its prime, it is probably mere chance that there are not early specimens in the National Herbaria. I have myself seen it in three stations near Mitcham, from one of which specimens were distributed (*Rep. Watson B.E.C.*, 1930-1, 73). Owing to the greater attention which has been given to adventive floras in recent years, Coriander has been frequently recorded from docks, public rubbish dumps, railway sidings, etc.—habitats which give a lower impression of its standing in our lists than it truly deserves.—J. E. Lousley. [*Coriandrum* has also been recorded as a casual from v.-cc. 1 and 2 (Davey, *Fl. Cornw.*, 220), and more recently from waste ground, Penryn, W. Cornwall, v.-c. 1, Tresidder, ex Thurston (1936, 21).—Ed.]

†280/1. Cuminum Cyminum L. Dagenham, S. Essex, v.-c. 18, J. P. M. Brenan, N. Y. Sandwith, and H. K. A. Shaw.

†283/2. Caucalis daucoides L. Cardiff Docks, Glamorgan, v.-c. 41, R. L. Smith.

†283/8. Caucalis latifolia L. Cardiff Docks, Glamorgan, v.-c. 41, R. L. Smith; Tanfield, *N.W. Yorks, v.-c. 65, W. A. Sledge.

†285/4. Cornus Mas L. Growing freely in a copse on the Cotswolds, near Cheltenham, E. Gloster, v.-c. 33, W. R. Roberts, comm. Dept. Bot., Nat. Mus. Wales.

†287/2b. Sambucus nigra L., var. laciniata L. Wood south of Garon's wood, between Horsley and Clandon, Surrey, v.-c. 17, H. J. Burkill.

287/3. Sambucus Ebulus L. About 2 acres in field, Torbryan, S. Devon, v.-c. 3, Miss C. Dick, comm. G. T. Fraser; Jennycliffe, near Plymouth, S. Devon, v.-c. 3, E. Masson Phillips.

290/1. Linnaea borealis L. Druce's *Comital Flora* records this species from three English vice-counties, 11, 62 and 67. It is shown conclusively by Flintoff (1936 B) that the plant is not known to exist in any of these at the present time. The Hampshire and two of the three Yorkshire records are based on misidentifications; in the third Yorkshire locality it has not been seen since first discovered in 1863, while it has disappeared from each of the two neighbouring localities in Northumberland.

†292/1. Leycesteria formosa Wall. Ivybridge Woods, S. Devon, v.-c. 3, E. Masson Phillips.

296/1. Galium boreale L. One clump on river bank, Maxwelltown by Dumfries, v.-c. 73, P. H. Cooke.

296/2c. Galium Mollugo L., var. pycnotrichum H. Br. Exeter, Clyst St George, Bishopsteignton, and Torquay, S. Devon, v.-c. 3, Herb. Hiern; Kingsteignton, S. Devon, v.-c. 3, G. T. Fraser; Sampford Courtenay, N. Devon, v.-c. 4, Herb. Hiern. Det. C. E. Britton.

296/2d. Galium Mollugo L., var. angustifolium Leers. Beer Head, Kingsteignton and Torquay, S. Devon, v.-c. 3, Herb. Hiern; Dawlish West, S. Devon, v.-c. 3, G. T. Fraser; Sampford Courtenay, N. Devon, v.-c. 4, Herb. Hiern. Det. C. E. Britton.

296/2×9. Galium Mollugo L. × verum L. Near Old Romney, E. Kent, v.-c. 15, N. D. Simpson.

296/3d. Galium erectum Huds., var. hirtifolium H. Br. Moretonhampstead, S. Devon, v.-c. 3, G. T. Fraser. Det. C. E. Britton.

*296/6. Galium uliginosum L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

296/8. Galium debile Desv. There are specimens of this species (*teste* C. E. Britton) in Torquay Museum from Chudleigh Knighton, S. Devon, v.-c. 3, June 1851, C. E. Parker, as *G. saxatile*, comm. G. T. Fraser; near Hatchett's Pond, Beaulieu, S. Hants, v.-c. 11, Lady Davy.

*†296/12b. Galium Vaillantii DC. Allotments, Burton-on-Trent, Staffs, v.-c. 39, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and C. Thomas.

298/3. Asperula cynanchica L. Fishcombe, Churston Ferrers, S. Devon, v.-c. 3, a slight extension from the Berry Head area, G. T. Fraser.

†298/5. Asperula arvensis L. Single plant in school garden, Mullion, W. Cornwall, v.-c. 1, Perry, ex Thurston (1936, 22); Cardiff Docks, Glamorgan, v.-c. 41, R. L. Smith.

300/1b. Sherardia arvensis L., var. maritima Griseb. Dawlish Warren and Daddyhole, Torquay, S. Devon, v.-c. 3, G. T. Fraser, also a white-flowered form from Churston Ferrers (noted also by T. Archer Briggs at Newton Ferrers and Plymstock).

304/3b. Valerianella dentata (L.) Poll., var. mixta (L.) Dufresne. Tor Cross, S. Devon, v.-c. 3, growing with *V. dentata* and *V. rimosa*, J. Chapple.

306/2. Dipsacus pilosus L. By River Mole, Norbury Park, Leatherhead, Surrey, v.-c. 17, an old station, apparently last recorded from here in Brewer's *Fl. Surrey* (1863), J. E. Lousley; Patrishaw, Brecon, v.-c. 42, E. P. Perman, comm. Dept. Bot., Nat. Mus. Wales.

†311/5. **Grindelia chiloensis** (Cornelissen) Cabrera. (*Hoorebekia chiloensis* Cornelissen, *Grindelia speciosa* Gill., ex. Hook & Arn.). Bank of Tweed, Galafoot, Selkirk, v.-c. 79, growing among wool casuals, 14th September 1909, J. Fraser in Herb. Kew. Native of the dry mountains and steppes of Patagonia, where it is abundant. An addition to *The Adventive Flora of Tweedside*, as well as a new British alien. It has been long known in cultivation as a showy garden plant and is nearly hardy in S. England. Figured in *Bot. Mag.*, t. 9471, 193, where this record is mentioned. Det. N. Y. Sandwith.

†318/18(5). **Aster microcephalus** (Mig.) Franch. & Sav. Native of Japan. Probably a garden outcast, Hooe Meavy, S. Devon, v.-c. 3, E. Masson Phillips. Det. Kew.

†327/1. Anaphalis margaritacea C. B. Clarke, var. subalpina A. Gray. Quarry, Narberth, Pembroke, v.-c. 45, E. P. Perman, comm. Dept. Bot., Nat. Mus. Wales.

334/2. Pulicaria vulgaris Gaertn. This seems to be becoming much rarer on Barnard's Green, Worcestershire, v.-c. 37, where it used to be fairly plentiful, F. M. Day.

†341/3. Xanthium spinosum L. One large plant in a cabbage-field, one mile West of Faversham, E. Kent, v.-c. 15, G. Haynes; on refuse near the docks, Felixstowe, E. Suffolk, v.-c. 25, Miss V. M. Leather, comm. R. Burn.

†354/1. Galinsoga parviflora Cav. Common weed in Messrs Watts Ltd.'s Nurseries, Redhill, Bournemouth, S. Hants, v.-c. 11. N. D. Simpson; allotments, Burton-on-Trent, Staffs, v.-c. 39, W. H. Hardaker, C. Thomas, R. C. L. Burges and J. E. Lousley.

†365/7. Achillea nobilis L. Waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes. Det. R.B.G., Edinburgh.

*†368/4. Anthemis Cotula L. Fort Argyll Quarry, Kintyre, v.-c. 101, Latimer McInnes.

*†371/2. Matricaria Chamomilla L. N. Askomil Road and occasionally in stack yards, Kintyre, v.-c. 101, Latimer McInnes.

†378/16. Artemisia biennis Willd. Seaford, E. Sussex, v.-c. 14, one plant, L. A. W. Burder. Det. Mus. Brit.

*†380/2. Petasites albus (L.) Gaertn. Middleton Tyas, N.W. Yorks, v.-c. 65 (Lucas: *Vasc.*, *22*, No. 2, 82).

†381/1. Doronicum Pardalianches L. Garden escape, Yelverton, S. Devon, v.-c. 3, E. Masson Phillips; lane behind Market Weston Rectory, W. Suffolk, v.-c. 26, where it was known to Hind (*Fl. Suffolk*, 1889) [delete " 25 or " in *Com. Fl.*—Ed.]; Woodchester Park, in quantity in a thick wood, near Frocester, W. Gloster, v.-c. 34, J. E. Lousley; Kymin Hill, Troy Park Wood and railway bank near Hadnock, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales [add to *Com. Fl.*, but see *Welsh Flowering Plants* for previous record. —Ed.]; escape, New Orleans Glen, *Kintyre, v.-c. 101, Latimer McInnes; very " wild " by the river in Brahan Castle grounds, Conon Bridge, W. Ross, v.-c. 105, J. E. Lousley.

†383/7. Senecio squalidus L. Goodrington, Paignton, S. Devon, v.-c. 3, A. Crawshaw, comm. G. T. Fraser; increasing at Salisbury, *S. Wilts, v.-c. 8, H. J. Goddard; Coatham, N.E. Yorks, v.-c. 62, W. A. Sledge; railway embankment, a little North of Doncaster, *S.W. Yorks, v.-c. 63 (Dallman, 1936 B); Stockton race-course and at the Durham end of Newport Bridge, *Durham, v.-c. 66 (Elgee, 1936).

†383/8. Senecio viscosus L. Teignmouth and Goodrington, Paignton, S. Devon, v.-c. 3, A. Crawshaw, comm. G. T. Fraser.

383/10e. Senecio vulgaris L., var. radiatus Koch. Railway at Leominster station, Herefordshire, v.-c. 36, F. M. Day.

†395/1c. Carduus nutans L., var. macrocephalus Desf. Whitehawk, Brighton, E. Sussex, v.-c. 14, L. A. W. Burder. Confirmed by Kew.

†395/8. **Carduus leiophyllus** Petrov. This species, recorded in *B.E.C. 1935 Rep.*, 32 (1936), being an addition to *Br. Pl. List*, should have been printed as above. Add " Det. J. E. Lousley."

396/3×9. Cirsium heterophyllum (L.) Hill × palustre (L.) Scop. Two plants near Roybridge, Glen Spean, Westerness, v.-c. 97, E. C. Wallace.

396/4b. Cirsium acaule (L.) Weber, var. caulescens (Pers.) DC. Kingskerswell Common, S. Devon, v.-c. 3, G. T. Fraser.

396/8b. Cirsium arvense (L.) Scop., var. mite Koch. The Potteries, Bovey Tracey, and Abbotskerswell, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson.

396/8e. Cirsium arvense (L.) Scop., var. setosum C. A. Mey. The Potteries, Bovey Tracey, Wolborough Decoy and Abbotskerswell, S. Devon, v.-c. 3, G. T. Fraser.

396/8f. Cirsium arvense (L.) Scop., var. setosum C. A. Mey., subvar. integrifolium (Koch), f. incanum (Ledeb.). Avonmouth Docks, W. Gloster, v.-c. 34, W. H. Hardaker. Det. J. E. Lousley.

396/9×10. Cirsium palustre (L.) Scop. × pratense (Huds.) DC. Aylesbeare, S. Devon, v.-c. 3, G. T. Fraser.

†397/1. Onopordon Acanthium L. Wolborough Decoy, S. Devon, v.-c. 3, G. T. Fraser; chalk cliffs east of Cuckmere Haven, E. Sussex, v.-c. 14, E. C. Wallace.

†399/1. Silybum Marianum Gaertn. Lower Ashton, S. Devon, v.-c. 3, P. M. Hall; Pembrey, *Carmarthen, v.-c. 44, Herb. Motley, R. Institution of S. Wales, comm. Dept. Bot., Nat. Mus. Wales.

405. Centaurea L. Determined by C. E. Britton.

405/8. Centaurea obscura Jord. Moretonhampstead, S. Devon, v.-c. 3, F. M. Day.

405/8b. Centaurea obscura Jord., var. subnemoralis C.E.B. Teignmouth, S. Devon, v.-c. 3, F. M. Day.

405/11c. Centaurea nemoralis Jord., var. subintegra C.E.B. Preston, Kingsteignton, S. Devon, v.-c. 3, G. T. Fraser.

405/11d. Centaurea nemoralis Jord., var. minima C.E.B. Beer Head, S. Devon, v.-c. 3, Rev. W. Keble Martin; a rayed form, Sharkham Pt., Brixham, S. Devon, v.-c. 3, F. M. Day.

*405/12. Centaurea Cyanus L. Occasional in corn fields, Kintyre, v.-c. 101, Latimer McInnes.

†405/25. Centaurea diffusa Lam. Topcliffe, N.E. Yorks, v.-c. 62, W. A. Sledge.

†405/31. Centaurea solstitialis L. Bee Sands, S. Devon, v.-c. 3, 1934, since destroyed, G. T. Fraser.

†409/1. Cichorium Intybus L. Casual, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.*, but not N.C.R., see *Top. Bot., Supp.* i, 50.—Ed.]

415/1. Picris echioides L. A form without prickles, Orecombe, Exmouth, S. Devon, v.-c. 3, G. T. Fraser. "A very uncommon glabrous form," Kew.

*416/3. Crepis biennis L. Road near Mitford (Miss M. E. Urton) and Stocksfield, S. Northumberland, v.-c. 67 (Temperley: *Vasc., 22*, No. 3, 118).

416/5h. Crepis capillaris (L.) Wallr., var. anglica Dr. & Th. Coldbackie, Tongue, W. Sutherland, v.-c. 108, J. E. Lousley.

*†419/8. Hieracium aurantiacum L. Known for over 20 years on a railway embankment near Birtley, J. W. Heslop Harrison and well established, Thistly Cock Hill, Crawcrook, Durham, v.-c. 66 (Eltringham: *Vasc.*, *22*, No. 4, 159) [the latter locality is recorded as in v.-c. 67, but *teste* G. W. Temperley it is in v.-c. 66.—Ed.]

419/11. Hieracium anglicum Fr. Poulsallagh, Clare, v.-c. H. 9; Clifden, W. Galway, v.-c. H. 16, P. M. Hall and N. D. Simpson. Det. H. W. Pugsley.

419/224. Hieracium rigidum Hartm. A form of this species, Laffan's Plain, near Aldershot, N. Hants, v.-c. 12, P. M. Hall. Det. H. W. Pugsley.

419/241j. Hieracium umbellatum L., approaching var. coronopifolium Bernh. Bank of Canal, near Fleet, N. Hants, v.-c. 12, P. M. Hall. Det. H. W. Pugsley.

*421/1. Hypochaeris maculata L. A single plant on coast near Easington, Durham, v.-c. 66, 1928 (Cooke: *Vasc.*, *19*, 150, 1933); as there was some doubt about the plant, Mr Cooke sowed some of the seed in a cold frame in his garden. The seedlings flowered in 1933 and from these the identification was confirmed.—G. W. Temperley.

423. Taraxacum Zinn. All the following determinations are by Dr G. Haglund. The records attributed to Dr G. Degelius and Dr J. A. Nannfeldt refer to plants grown at Lund, Sweden, by Dr Haglund from seeds collected by them in Britain (Haglund, 1935).

423/1. Taraxacum brachyglossum Dahlst. Byfleet, Surrey, v.-c. 17, H. Phillips.

423/5(2). Taraxacum glauciniforme Dahlst. Woking, Surrey, v.-c. 17, H. Phillips; on limestone rocks, Inishmore, Kilronan, Aran Islands, Clare, v.-c. H. 9, G. Degelius.

423/10(2). Taraxacum rubicundum Dahlst. The Quenvais, Jersey, H. Phillips.

423/17. Taraxacum britannicum Dahlst. Lisdoonvarna, Clare, v.-c. H. 9, G. Degelius.

423/23. Taraxacum faeroense Dahlst. Redgrave Fen, E. Suffolk, v.-c. 25, J. Chapple.

423/25. Taraxacum Landmarkii Dahlst., forma. Byfleet, Surrey, v.-c. 17; Hitchin, Hertfordshire, v.-c. 20, H. Phillips.

423/29. Taraxacum Nordstedtii Dahlst. Oughterard, W. Galway, v.-c. H. 16, G. Degelius.

423/32. Taraxacum serratilobum Dahlst. Hitchin, Hertfordshire. v.-c. 20, H. Phillips.

423/35. Taraxacum unguilobum Dahlst. Oughterard, W. Galway, v.-c. H. 16; Church of St Joseph, Galway, N.E. Galway, v.-c. H. 17. G. Degelius.

423/47(2). Taraxacum connexum Dahlst. Harbour-wall, ? Fishguard, Pembrokeshire, v.-c. 45, G. Degelius.

423/51. Taraxacum Dahlstedtii Lindb. f. Fishguard, Pembrokeshire, v.-c. 45, G. Degelius.

423/55. Taraxacum expallidiforme Dahlst. Lawn, Kew Gardens, Surrey, v.-c. 17, J. A. Nannfeldt.

423/62(2). Taraxacum hamiferum Dahlst. Killarney, N. Kerry, v.-c. H. 2, G. Degelius.

423/79(2). Taraxacum platylobum Dahlst. Hitchin, Hertfordshire. v.-c. 20, H. Phillips.

423/80. Taraxacum polyodon Dahlst. Hitchin, Hertfordshire. v.-c. 20, H. Phillips.

423/80(2). Taraxacum porrectidens Dahlst. Hitchin, Hertfordshire, v.-c. 20, H. Phillips.

425/1. Lactuca virosa L. Moor Monkton and E. Cowton, N.E. Yorks, v.-c. 61, Miss C. M. Rob.

†425/2c. Lactuca Serriola L., var. **dubia** (Jord.) Rouy. Waste ground, Norham Road, Oxford, v.-c. 23. Lady Douie. Martrin-Donos, *Florule du Tarn*, 408, 1864, gives the following account of *Lactuca dubia* Jord., *Pugillus*, 119:— "Leaves oblong-entire, of a pale green; flowers pale yellow, bright underneath, in drooping clusters before flowering. Achenes pale olive-coloured, with 6-8 nerves on each side." Det. J. E. Lousley.

†425/8. Lactuca macrophylla (DC.) A. Gray. *L. alpina* was recorded for Cumberland in *B.E.C. 1933 Rep.*, 532 (1934) and *1934 Rep.*, 831 (1935). The late W. H. Pearsall left the following note:—"The Gleuridding plant locally known as 'Bob Nixon's Helvellyn plant.' Mr Albert Wilson sent me a fresh flowering specimen of this in July and it proved to be the Caucasian species *L. macrophylla*. Det. Kew."

†425/9. Lactuca tatarica C. A. Meyer. Well established on the sand-dunes near Freshfield, S. Lancs, v.-c. 59, where it was first seen

in 1934 by H. E. Bunker. It has now (1936) nearly doubled its area. Det. J. Chapple.

427/2c. Sonchus arvensis L., var. angustifolius Meyer. A maritime form of cliffs and estuaries, as Dawlish Warren, Torquay, Brixham and Kingsbridge, S. Devon, v.-c. 3, G. T. Fraser.

*431/2. Lobelia urens L. Four miles from Monmouth, but in Herefordshire, v.-c. 36 (Mrs P. Wiseman, ex Hyde, 1936).

432/1b. Jasione montana L., var. major M. & K. Manaton and Thurlestone, S. Devon, v.-c. 3, G. T. Fraser.

433/1. Wahlenbergia hederacea (L.) Reichb. Exceptionally large in a fairly dry sloping pine-wood, St Leonard's Forest, W. Sussex, v.-c. 13, J. E. Lousley.

†435/4. Campanula rapunculoides L. Whitehawk, Brighton, E. Sussex, v.-c. 14, in great quantity in derelict arable field, L. A. W. Burder.

†435/6. Campanula persicifolia L. Wood near Clapham Station, Mid-West Yorks, v.-c. 64, " not native but far removed from any garden," W. A. Sledge.

435/8. Campanula patula L. Near Brookwood, Distr. iv, Surrey, v.-c. 17, W. E. Warren.

439/1b. Oxycoccus quadripetalus Gilib., var. microcarpus Turcz. Bog near Rannoch Station, Mid-Perth, v.-c. 88, J. E. Lousley.

†439/2. Oxycoccus macrocarpus Pursh. Bogs near Lyndhurst, S. Hants, v.-c. 11, June 1927, R. Melville in Herb. Kew, ex Lousley (1936 A; 198).

†440/1. Arbutus Unedo L. Introduced trees very fine in the woods on Cliff between Porlock Weir and Culbone, S. Somerset, v.-c. 5, J. E. Lousley.

†443/1. Gaultheria Shallon Pursh. Naturalised about 1 mile north of Toy's Hill, Brasted, W. Kent, v.-c. 16, Lousley (1936 A; 200).

453/1. Pyrola rotundifolia L. In fen near Upton Broad, E. Norfolk, v.-c. 27, J. E. Lousley and G. Watts.

456/1. Monotropa Hypopitys L. Ampfield Wood, S. Hants, v.-c. 11, A. White, comm. P. M. Hall; Grin Wood, near Buxton, Derby, v.-c. 57 (F. T. Hall: *N.W. Nat.*, *11*, No. 3, 275-6).

457/1b. Limonium vulgare Mill., var. pyramidale Dr. Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser. [This form has been mis-

taken for *L. humile* but all Devon records for that species are errors.—W. KEBLE MARTIN.]

*†459/1. HOTTONIA PALUSTRIS L. Fishpond, Lyneham, N. Wilts, v.-c. 7, a single plant, undoubtedly brought in with fish and not seen since 1930, J. DONALD GROSE.

†463/3. LYSIMACHIA PUNCTATA L. Waste land at the Water Works, Wylam, S. Northumberland, v.-c. 6 (Eltringham: *Vasc.*, *22*, No. 4, 159).

467/2b. ANAGALLIS ARVENSIS L., var. CARNEA Schrank. Plentiful on sand-dunes, Carn Near, Tresco, Isles of Scilly, v.-c. 1, J. E. LOUSLEY; sand-dunes, Darrynane, S. Kerry, v.-c. H. 1, P. M. HALL and N. D. SIMPSON.

467/2c. ANAGALLIS ARVENSIS L., var. VERTICILLATA Diard. Near Brockenhurst, S. Hants, v.-c. 11, Miss G. YOUNG.

469/1. SAMOLUS VALERANDI L. Cherwell Bank, Oxford, v.-c. 23, G. M. ASH [an increasingly rare plant in the county, J. CHAPPLE]; Hollybed Common, Castlemarton, Worcestershire, v.-c. 37, F. M. DAY.

†470/1. SYRINGA VULGARIS L. Abundantly naturalised in hedges, north of Abbey Leix, Leix, v.-c. H. 14, P. M. HALL and N. D. SIMPSON.

*476/1. MICROCALA FILIFORMIS H. & L. Damp slacks behind Seaton Sluice dunes, Blyth, S. Northumberland, v.-c. 67, Heslop Harrison (1936 B), a very remarkable extension of range.

*479/1. CICENDIA PUSILLA Griseb. Raasay I., v.-c. 104, J. W. HESLOP HARRISON. This is one of the most remarkable extensions of range ever recorded. Coming on top of the discovery of the two *Juncí*, *pygmaeus* and *capitatus*, it leads one to hope for other new discoveries in the Islands of the West Coast of Scotland.—ED.

480/6. GENTIANA ANGLICA Pugsley (=*G. lingulata* Ag., var. *praecox* (Towns.) Murbeck). Milk Hill, N. Wilts, v.-c. 7, in small quantity, J. CHAPPLE and J. D. GROSE.

†488/1. PHACELIA CILIATA Benth. Felixstowe Docks, E. Suffolk, v.-c. 25, Miss E. RAWLINS. Det. A. J. WILMOTT.

†496/4. AMSINCKIA INTERMEDIA F. et M. Felixstowe Docks, E. Suffolk, v.-c. 25, Miss E. RAWLINS. Det. A. J. WILMOTT.

*497/2. SYMPHYTUM TUBEROSUM L. Roadside near Maresfield, E. Sussex, v.-c. 14, July 1934, A. H. WOLLEY-DOD, *B.E.C. 1935 Rep.*, 179 (1936).

†498/1. Borago officinalis L. Cliffs at Looe, E. Cornwall, v.-c. 2; South Huish, S. Devon, v.-c. 3, E. Masson Phillips; Pembrey Burrows, Carmarthen, v.-c. 44, Herb. Motley, Royal Institution of S. Wales, comm. Dept. Bot., Nat. Mus. Wales; Machrihanish, Kintyre, v.-c. 101, Latimer McInnes.

*†500/1. Anchusa sempervirens L. Roadside near Machrihanish House, Kintyre, v.-c. 101, Latimer McInnes.

†503/1. Pulmonaria officinalis L. Established in a small remnant of a wood, near Aberdare, Glamorgan, v.-c. 41, Myrddin Williams, comm. Dept. Bot., Nat. Mus. Wales. [Add to *Com. Fl.*, but see *Welsh Flowering Plants* for previous record.—Ed.]

506/2. Myosotis brevifolia C.E.S. Near Winch Bridge, N.W. Yorks, v.-c. 65; Weardale, *Durham, v.-c. 66. H. W. Pugsley.

506/7. Myosotis sylvatica (Ehrh.) Hoffm. Wood at Chittoe, v.-c. 7, N. Wilts; wood near Shalbourne, v.-c. 8, S. Wilts, J. D. Grose. Both det. A. E. Wade. [These records not only remove the brackets from v.-c. 8 in *C.F.* but also confirm the occurrence of this species in v.-c. 7. Mr Grose points out that in many instances in previous B.E.C. Reports records from the Shalbourne district have been given as for v.-c. 7 instead of for v.-c. 8. It is very possible that the record, on which the entry in *C.F.* for v.-c. 7 is based, really refers to v.-c. 8. —Ed.]

506/9b. Myosotis collina Hoffm., var. Mittenii Baker. Dainton Common, Ipplepen, S. Devon, v.-c. 3, G. T. Fraser.

506/9c. Myosotis collina Hoffm., var. Lebelii (G. & G.) Corb. Risby Poors Heath, W. Suffolk, v.-c. 26, J. Chapple. Det. A. E. Wade.

506/10c. Myosotis versicolor Sm., var. pallida Bréb. St Catherine's Point, Jersey, J. Chapple [det. A. E. Wade]; Cornwood, S. Devon, v.-c. 3, E. Masson Phillips.

513/1d. Convolvulus arvensis L., var. obtusifolius Choisy. Near Cardiff, Glamorgan, v.-c. 41, Miss E. Vachell.

513/1e. Convolvulus arvensis L., var. Stonestreetii Dr. Constant for 16 years near Taunton, S. Somerset, v.-c. 5, H. Phippard, comm. J. E. Lousley.

*†515/4. Cuscuta trifolii Bab. Landscove, Brixham, S. Devon, v.-c. 3, 1934, E. Milton, comm. G. T. Fraser.

†515/7. Cuscuta suaveolens Ser. On clover, Catton, N.E. Yorks, v.-c. 62, Miss C. M. Rob.

†520/2. Lycium halimifolium Mill. Pendine, Carmarthen, v.-c. 44, Miss F. M. Lewis; waste land, Penrhyn Bay, Denbigh, v.-c. 50, Miss A. W. Morris: both comm. Dept. Bot., Nat. Mus. Wales. Det. A. E. Wade.

†522/1. Datura Stramonium L. Thorpfield, near Thirsk, N.E. Yorks, v.-c. 61, W. A. Sledge.

*†524/1. Hyoscyamus niger L. Casual, once only, Kintyre, v.-c. 101, Latimer McInnes.

527/3. Verbascum Thapsus L. Herm, Channel Islands, first record for the island, G. C. Brown.

*†527/4. Verbascum virgatum Stokes. Roadside near Dagenham Dock, S. Essex, v.-c. 18, A. H. Carter and H. S. Redgrove, comm. J. E. Lousley; waste ground, Colchester, *N. Essex, v.-c. 19, G. C. Brown, *B.E.C. 1935 Rep.*, 180 (1936).

†527/5. Verbascum Blattaria L. Waste ground, Dixton, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales.

†527/18. Verbascum phoeniceum L. Jersey Marine, Glamorgan, v.-c. 41, a true alien and not a garden escape, R. L. Smith.

†532/2. Linaria purpurea Mill. Clearbrook and Mutley, near Plymouth, S. Devon, v.-c. 3, E. Masson Phillips.

532/3. Linaria repens (L.) Mill. Bickleigh, S. Devon, v.-c. 3, E. Masson Phillips.

532/3×1. Linaria repens (L.) Mill. × vulgaris Mill. Par, W. Cornwall, v.-c. 1, J. E. Lousley; Richborough, E. Kent, v.-c. 15, A. H. Carter, comm. J. E. Lousley.

†532/5. Linaria supina Desf. Railway line, Clearbrook, S. Devon, v.-c. 3, E. Masson Phillips.

*532/7. Linaria minor (L.) Desf. On narrow-gauge track leading from Cocklaw Quarry, S. Northumberland, v.-c. 67 (Temperley: *Vasc.*, *22*, No. 3, 118).

*†532/26. Linaria Cymbalaria (L.) Mill. Naturalised in several places and spreading rapidly, Kintyre, v.-c. 101, Latimer McInnes.

†537/1. Mimulus guttatus DC. Large-flowered dwarf plants about 12 cm. in height on river shingle below the Sow of Atholl, Dalnaspidal, Mid-Perth, v.-c. 88, J. E. Lousley.

†537/1d. Mimulus luteus L., var. Youngianus Hook. A very ornamental plant with dark-coloured blotches on the corollas, by

stream, Reay Golf Course, Caithness, v.-c. 109, where it was known to E. S. Marshall, J. E. Lousley.

†537/2. Mimulus moschatus Dougl. Deancombe, near Burrator, S. Devon, v.-c. 3, E. Masson Phillips; by pond on Holmwood Common, Surrey, v.-c. 17, E. C. Wallace; naturalised in some quantity by a stream, Bach Howey, near Llanstephan, Radnor, v.-c. 43, J. G. Williams, comm. Dept. Bot., Nat. Mus. Wales.

*543/5. Veronica montana L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

543/18b. Veronica Tournefortii Gmel., var. Corrensiana (Lehm.) Hayek & Hegi. High Brooms Tip, Tunbridge Wells, W. Kent, v.-c. 16, J. P. M. Brenan.

543/20. Veronica polita Fries. The note under this number in *B.E.C. 1935 Rep.*, 35 (1936) should be deleted. That note and the following one referred to the same plant, the correct determination of which was *V. Crista-galli* Stev.

545. Euphrasia L. A large number of additional vice-county records are given in Pugsley (1936 A).

545. Euphrasia L. All the following were determined by H. W. Pugsley.

545/3. Euphrasia brevipila B. & G. Arisaig, Westerness, v.-c. 97, J. E. Lousley; between Cloghane and Mullaghveale, S. Kerry, v.-c. H. 1; Achill Island, W. Mayo, v.-c. H. 27, P. M. Hall and N. D. Simpson.

545/3b. Euphrasia brevipila B. & G., var. subeglandulosa Towns. Manaton, S. Devon, v.-c. 3, T. Stephenson.

545/9. Euphrasia curta Fries ex Wettst. Bee Sands, S. Devon, v.-c. 3, J. Chapple. "About the best British examples I have seen," H. W. Pugsley.

545/9b. Euphrasia curta Fr. ex Wettst., forma glabrescens (Wettst.). Arisaig, Westerness, v.-c. 97, J. E. Lousley.

545/5×10. Euphrasia nemorosa (Pers.) Löhr × occidentalis Wettst. Wall's Hill, Torquay, S. Devon, v.-c. 3, G. T. Fraser.

*545/10. Euphrasia occidentalis Wettst. Walney Island, N. Lancs, v.-c. 69, Mrs Foggitt.

545/10d. Euphrasia occidentalis Wettst., var. calvescens Pugsley. A dwarf form, Corbière, Jersey, J. Chapple; Kingskerswell and Berry Head, Brixham, S. Devon, v.-c. 3, T. Stephenson and P. M.

Hall; " probably this," Sinah, S. Hayling, S. Hants, v.-c. 11, P. M. Hall.

545/12b. Euphrasia frigida Pugsl., var. laxa Pugsl. At 3200 ft., Coire an t-Sneachda, Cairngorm, Easterness, v.-c. 96: the type-locality is " Cairngorm," and it may be useful to indicate a definite corrie in which it occurs, J. E. Lousley.

545/13. Euphrasia foulaensis Towns. Invernaver, Bettyhill, W. Sutherland, v.-c. 108, J. E. Lousley.

545/15. Euphrasia micrantha Reichb. Canal bank, Whixall, Salop, v.-c. 40, R. C. L. Burges.

*545/16. Euphrasia scotica Wettst. In turf, Holborn Head, Caithness, v.-c. 109, J. E. Lousley.

545/18. Euphrasia confusa Pugsl., f. albida Pugsl. Roadside near Spur Bog, South Haven Peninsula, Dorset, v.-c. 9, P. M. Hall.

545/18×5. Euphrasia confusa Pugsl. × nemorosa (Pers.) Löhr. Hennock, Kingskerswell and Churston Ferrers, S. Devon, v.-c. 3. T. Stephenson.

545/18×10. Euphrasia confusa Pugsl. × occidentalis Wettst. Berry Head, Brixham, S. Devon, v.-c. 3, T. Stephenson.

546/4. Bartsia viscosa L. Roadside, Hugh Town, St Mary's, Isles of Scilly, v.-c. 1, J. E. Lousley; in " slack " behind sand-dunes between Hunstanton and Holme-next-the-Sea, *W. Norfolk, v.-c. 28 (Tutin, 1936 B); near Strumble Head, Pembroke, v.-c. 45, B. Lloyd, comm. Dept. Bot., Nat. Mus. Wales as N.C.R. [This species is not given for v.-c. 45 in *Welsh Flowering Plants* but was recorded from Goodwick, Pembroke, by B. Lloyd in *B.E.C. 1931 Rep.*, 662 (1932).—Ed.]

546/5f. Bartsia Odontites Huds., var. divergens (Jord.) Dr. Nottage, Glamorgan, v.-c. 41, Miss E. Vachell.

548/5. Rhinanthus stenophyllus Schur. Manaton, S. Devon, v.-c. 3, T. Stephenson.

548/6. Rhinanthus monticola (Stern.) Dr. In an account of a walk from Settle to Arncliffe, Mid-West Yorks, v.-c. 64, on 11th July 1844, *Phyt.*, i, 1126 (November 1844), James Backhouse referred to " a remarkable form of *R. Crista-Galli* seen above the head of Gordale toward Malham Tarn. This was the species now known as *R. monticola* which grows in the place described, together with *Bartsia alpina* (Sledge, 1936 C).

549. Melampyrum L. Determined by C. E. Britton.

549/2. Melampyrum arvense L. Stagsden, Beds, v.-c. 30, D. M. Higgins, comm. C. E. Britton. [Add to *C.F.*, but not N.C.R., see *Rep. Wats. B.E.C.*, 1904-5, 21.—Ed.]

549/3d. Melampyrum pratense L., var. ericetorum D. Oliver. Bovey Tracey, S. Devon, v.-c. 3, T. Stephenson; Highland Water, S. Hants, v.-c. 11, P. M. Hall.

549/3g. Melampyrum pratense L., var. vulgatum (Pers.) Beck, sub-var. laurifolium Beauv. Marwell, Owslebury, S. Hants, v.-c. 11, P. M. Hall.

549/3h. Melampyrum pratense L., var. ovatum Spenn. Lower Lake, Killarney, N. Kerry, v.-c. H. 2, W. A. Sledge.

549/3i. Melampyrum pratense L., var. lanceolatum Spenn. Woodbury and Shute, S. Devon, v.-c. 3, B. Godfrey and C. H. Wright, comm. G. T. Fraser; Cahir River, Clare, v.-c. H. 9, W. A. Sledge.

549/3j. Melampyrum pratense L., var. hians Dr. Near Fingal Bridge, Drewsteignton, S. Devon, v.-c. 3, G. T. Fraser and P. M. Hall; Stockghyll Force, Ambleside, Westmorland, v.-c. 69, P. M. Hall and W. A. Sledge. [This is the common Devon form; of 24 gatherings submited to Mr Britton in 1936 all except one were *hians* forms. The colour ranges from deep orange to white in the same association; Mr Britton remarks that he has not previously met with the pale-flowered forms of *hians* which occur in Devon.—G. T. Fraser.]

549/3j. Melampyrum pratense L., var. hians Dr., f. platyphyllum Beauv. (=var. hibernicum Dr.). Gweek Drive, The Lizard, W. Cornwall, v.-c. 1, P. M. Hall; Ilsington, Buckland, Holne, Staverton and Bridford, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson (also recorded by Druce from Bere Alston in 1919); St Ann's, near Blarney, W. Cork, v.-c. H. 3; wooded shore, S.E. corner of L. Conn, W. Mayo, v.-c. H. 27, P. M. Hall and N. D. Simpson.

550/4. Orobanche major L. Keyingham, S.E. Yorks, v.-c. 61, J. Davies, comm. W. A. Sledge.

550/7. Orobanche Hederae Duby. Devil's Point, Stonehouse, Plymouth, S. Devon, v.-c. 3, E. Masson Phillips.

551/1. Lathraea Squamaria L. Raywell, near Hull, S.E. Yorks, v.-c. 61, very rare in this vice-county, R. Beardshaw, comm. W. A. Sledge; steep bank of Keltney Burn, Mid Perth, v.-c. 88 (rare in Highland districts of Perthshire), J. E. Lousley.

552/1. Utricularia vulgaris L. Peaty pool, near Upton Broad, E. Norfolk, v.-c. 27, J. E. Lousley.

558. Mentha L. All the following records (except one, which is indicated) were named or confirmed by A. L. Still.

558/1. Mentha rotundifolia (L.) Huds. Saints Bay, Guernsey, Channel Islands, G. C. Brown.

558/1×4. Mentha rotundifolia (L.) Huds. × spicata Huds. = × cordifolia (Opiz) Fraser. Trungle Moor, Paul; farmyard, Tresamble Common; roadside near Goonbell Halt, all W. Cornwall, v.-c. 1, J. E. Lousley; near G.W.R. goods yard, Newton Abbot, S. Devon, v.-c. 3, F. M. Day, G. T. Fraser and T. Stephenson; Flat Holm, Glamorgan, v.-c. 41, Ivor Evans. Det. Mrs C. Sandwith (last record only).

558/3c. Mentha longifolia (L.) Huds., var. mollissima (Borckh.) Rouy. Near G.W.R. goods yard, Newton Abbot, S. Devon, v.-c. 3, F. M. Day, G. T. Fraser, and T. Stephenson; near Dundee, Angus, v.-c. 90, P. H. Cooke.

†558/4. Mentha spicata L. Stream-side, near Dundee, Angus, v.-c. 90, P. H. Cooke. "A form of *M. spicata*, near to what Fraser called *nervoso-spicata* but less hairy."

558/6a. ×Mentha piperita L., var. officinalis Sole. Danehill, E. Sussex, v.-c. 14, A. L. Still; near the Horse and Jockey Inn, Colwall and Evendine, Colwall, Hereford, v.-c. 36, F. M. Day and M. L. Williams; canalside, Ladywell, Whixall, Salop, v.-c. 40, J. E. Lousley and R. C. L. Burges.

558/6d. ×Mentha piperita L., var. subcordata Fraser. Brookside, Kidderminster, Worcester, v.-c. 37, R. C. L. Burges.

558/7c. Mentha aquatica L., var. Lobeliana Briq. Old canal, Exeter, S. Devon, v.-c. 3, T. Stephenson.

558/7d. Mentha aquatica L., var. minor Sole (=*capitata* (Opiz) Briq.). Kidderminster, Worcester, v.-c. 37, R. C. L. Burges.

558/7h. Mentha aquatica L., var. nicaeensis Briq. Exminster marshes, S. Devon, v.-c. 3, G. T. Fraser.

558/8. ×Mentha hircina (Hull) Fraser (=×*M. piperita* L., var. *sylvestris* Sole). Bedwyn Brail, N. Wilts, v.-c. 7, J. D. Grose and A. L. Still; Danehill, E. Sussex, v.-c. 14, A. L. Still; brookside, Kidderminster, Worcester, v.-c. 37, R. C. L. Burges.

558/9c. ×Mentha verticillata (L.), nearest to var. ovalifolia Briq. Prawle Point, S. Devon, v.-c. 3, J. Chapple.

558/9f. ×Mentha verticillata (L.), var. adulterina Briq. Scabbacombe and Coffinswell, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson; Rye Green, Odiham, N. Hants, v.-c. 12, A. L. Still.

558/9h. ×Mentha verticillata (L.), var. rubrohirta (L. & C.) Briq. Brixham and The Potteries, Bovey Tracey, S. Devon, v.-c. 3, F. M. Day.

558/10h. ×Mentha gentilis L., var. variegata (Sole) Sm. Kingskerswell, S. Devon, v.-c. 3, T. Stephenson.

*558/11. ×Mentha cardiaca Baker. Near Castle Combe, N. Wilts, v.-c. 7, J. D. Grose.

558/12. ×Mentha rubra Huds. Side of cultivated field, Tresamble Common, W. Cornwall, v.-c. 1, J. E. Lousley; brook-side, Kidderminster, Worcester, v.-c. 37, R. C. L. Burges.

562/5. Calamintha ascendens Jord. On a hedgebank, High Coniscliffe, Durham, v.-c. 66 (Nicholson: *Vasc.*, *21*, 154, 1935). Det. H. W. Pugsley. [A confirmation of an old record of "*Thymus calamintha*" by Edward Robson in Winch's "Flora." *Top. Bot.* has "66 Durham ? Extinct" and *Com. Fl.* gives 66 in brackets.—Ed.]

562/5b. Calamintha ascendens Jord., var. Briggsii Syme. St Blazey, E. Cornwall, v.-c. 2, Tresidder, ex Thurston (1936; 34).

562/7. Calamintha Nepeta (L.) Scheele. Ford End, near Pleshey, N. Essex, v.-c. 19, J. E. Lousley and R. Melville.

†565/1. Melissa officinalis L. Near the Palace, St David's, Pembroke, v.-c. 45, Lousley (1936 A; 200). [Add to *Com. Fl.*, but not N.C.R., previously recorded in *Welsh Flowering Plants*.—Ed.]

†566/1. Salvia pratensis L. Millbrook, S. Hants, v.-c. 11, S. A. Warner; meadow which may have been originally sown, near Farnborough, W. Kent, v.-c. 16, H. W. Mansfield, comm. J. E. Lousley.

†566/7. Salvia Aethiopis L. Fowl-run, Polperro, St Agnes, W. Cornwall, v.-c. 1, Skinner, ex Thurston (1936; 34).

569/1. Nepeta Cataria L. Bovey Tracey, S. Devon, v.-c. 3, Mrs Adamson, comm. G. T. Fraser.

572/2. Scutellaria minor Huds. Plentiful on Breighton Common, near Howden, S.E. Yorks, v.-c. 61, only the second recorded locality in the vice-county, A. E. Greaves, comm. W. A. Sledge.

573/2. Prunella laciniata L. Foxcote Hill, E. Gloster, v.-c. 33, Lady Birchall.

578/1. Galeopsis speciosa Mill. Near Crose Mere, Salop, v.-c. 40, J. E. Lousley and R. C. L. Burges; an allotment weed among potatoes, Gabalfa, near Llandaff, Glamorgan, v.-c. 41, R. L. Smith; Mill Allotments, Ullapool, W. Ross, v.-c. 105 (although common in many Scotch counties there is only one localised record for v.-c. 105 in Druce's *Fl. W. Ross*, 1929), J. E. Lousley.

581/4c. Lamium hybridum Vill., var. dissectum Mutel. Kenfig, Glamorgan, v.-c. 41, Miss E. Vachell. Det. C. E. Britton.

*581/5. Lamium moluccellifolium Fries. Between Birtley and Chester-le-Street, Durham, v.-c. 66 (Heslop Harrison: *Vasc.*, *21*, 155, 1935).

587/3. Ajuga genevensis L. Although normally an early flowerer, and quite burned up in June 1934, this was in good flower in excellent condition on September 19th, 1936, on Phillack Towans, Hayle, W. Cornwall, v.-c. 1, J. E. Lousley.

†588/1. Plantago ramosa (Gilib.) Asch. Newton Abbot tip, Wolborough, S. Devon, v.-c. 3, T. Stephenson; an extensive clump, Hillingdon gravel-pits, Middlesex, v.-c. 21, P. H. Cooke.

†593/3. Herniaria hirsuta L. On a gravelly heap, Burton-on-Trent, Staffs, v.-c. 39: recorded from this district by Curtis and Druce in *B.E.C. 1930 Rep.*, 468 (1931), this colony may be a fairly permanent one, as the ground on which the plant grows is probably seldom disturbed, J. E. Lousley, R. C. L. Burges, W. H. Hardaker and C. Thomas.

†596/11b. Amaranthus angustifolius Lam., var. polygonoides (Moq.) Thell. Waste ground, Splott, Cardiff, Glamorgan, v.-c. 41, R. L. Smith, comm. Dept. Bot., Nat. Mus. Wales. Det. A. E. Wade.

†598/2. **Alternanthera paronychioides** St Hilaire, *Voy. Brés.*, ii, II, 43. Native of Tropical America. Dagenham, S. Essex, v.-c. 18, September 1936, J. P. M. Brenan. Det. N. Y. Sandwith at Kew.

*†600/3. Chenopodium Bonus-Henricus L. Kilkerran shore, Campbeltown, Kintyre, v.-c. 101, site recently destroyed by building of new breast-wall, Latimer McInnes.

600/6. Chenopodium murale L. Sand-dunes, Tresco, Isles of Scilly, v.-c. 1, J. E. Lousley; Littlestone-on-Sea, E. Kent, v.-c. 15, J. E. Lousley and E. C. Wallace.

†600/8×24. Chenopodium album L. × Berlandieri Moq., sub-sp. Zschackei (Murr) Aell. = × variabile Aell., var. Murrii Aell. High Brooms Tip, Tunbridge Wells, W. Kent, v.-c. 16, J. P. M. Brenan. Det. P. Aellen.

*†600/12. Chenopodium ficifolium Sm. Waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

†600/13. Chenopodium glaucum L. Manure heaps, Laffans Plain, near Aldershot, N. Hants, v.-c. 12, P. M. Hall, J. E. Lousley and E. C. Wallace; delete * for v.-c. 25, *B.E.C. 1935 Rep.*, 39 (1936), see *B.E.C. 1924 Rep.*, 593 (1925).

600/14. Chenopodium Vulvaria L. Probably native in disturbed sandy ground near the sea, and also a mile away on a rubbish dump, Littlestone-on-Sea, E. Kent, v.-c. 15, J. E. Lousley and E. C. Wallace.

†600/36. Chenopodium capitatum (L.) Asch. Newton Abbot tip, Wolborough, S. Devon, v.-c. 3, G. T. Fraser.

†602/1. Roubieva multifida Moq. Near the Quay, Christchurch, S. Hants, v.-c. 11, 1921, since disappeared, N. D. Simpson.

†606/1. Atriplex Halimus L. Dawlish Warren (? planted), S. Devon, v.-c. 3, E. Masson Phillips.

606/8. Atriplex sabulosa Rouy. Sandwich Beach, E. Kent, v.-c. 15, J. E. Lousley.

615/2b. Polygonum Convolvulus L., var. subalatum Lej. & Court. In potato field, Callestick, W. Cornwall, v.-c. 1, F. Rilstone; Chalfont St Giles, Bucks, v.-c. 24, F. M. Day.

*615/3. Polygonum Bistorta L. Not common, Kintyre, v.-c. 101, Latimer McInnes.

615/6×7. Polygonum lapathifolium L. × Persicaria L. Newton Abbot tip, Wolborough, S. Devon, v.-c. 3, G. T. Fraser. Det. C. E. Britton.

615/7e. Polygonum Persicaria L., var. ruderale Meisn. Newton Abbot tip, Wolborough, S. Devon, v.-c. 3, G. T. Fraser. Det. C. E. Britton.

615/7h. Polygonum Persicaria L., var. prostratum Bréb. Slapton Ley, S. Devon, v.-c. 3, G. T. Fraser. Det. C. E. Britton.

615/15. Polygonum aequale Lindm. Felin Fole, Carmarthen, v.-c. 44, 1844, Herb. Motley, Royal Institution of S. Wales, comm. Dept. Bot., Nat. Mus. Wales. [Add to *Com. Fl.*, but see *Welsh Flowering Plants* for earlier record.—Ed.]

†615/31. Polygonum polystachyum Wallich. Near Ballymakeery, W. Cork, v.-c. H. 3, Carleton Rea.

*618/12. RUMEX PALUSTRIS Sm. Pond near Warden Abbey, Bedfordshire, v.-c. 30, 1913, J. E. Little in *B.E.C. 1935 Rep.*, 61 (1936).

†618/24. RUMEX CUNEIFOLIUS Campd. Kenfig, Glamorgan, v.-c. 41: what were at first thought to be two forms of *R. rupestris* have now proved to belong to two distinct species, *rupestris* and *cuneifolius* (Gilmour, Thomas and Vachell, 1936), where there is an account of previous British records for this species.

An interesting summary of the British habitats of this species is given in *Journ. Bot.*, 1936, 56, from which it is apparent that this dock is now completely naturalised at several stations. Having seen it at Hayle, W. Cornwall, in 1934 and 1936, at Kenfig, Glamorgan, in 1935, and Braunton Burrows, N. Devon, in 1936, a comparison of the three localities may be useful. At Hayle the plant occurs in limited quantity and associated with many other aliens, and the suggestion that it has been introduced with mule fodder (*B.E.C. 1922 Rep.*, 621 (1923)), is tenable. Here it grows on sandy slopes (not in dune slacks as elsewhere), and probably the lack of moisture explains why it has not spread more rapidly. At Kenfig *R. cuneifolius* occurs in great quantity and is spread over a considerable area (*teste* Miss E. Vachell), and has all the appearance of a native plant. There is, however, a railway line within about half a mile as the crow flies and although introduction by this means does not seem very probable yet it is possible. At Braunton Burrows, however, where I saw the dock through the kindly guidance of Dr Elliston Wright, it occurs in a great crescent perhaps a quarter of a mile long in a dune slack a mile or more from the sea, and it is so far from any form of civilisation that the means of introduction cannot even be guessed at. Even if the fruits are able to endure immersion in salt water, and are washed up on the shore from shipping, it would still remain necessary for them to be blown a considerable distance inland before they reached a suitable spot for germination. It is noteworthy that although Dr Wright has known the colony (which he originally supposed to be *R. rupestris*) for many years it has not increased in size. It may be taken as certain that *R. cuneifolius* has been established both at Kenfig and Braunton for many years, and that at all three stations it is a very well established alien. —J. E. LOUSLEY.

*†625/1. HIPPOPHAE RHAMNOIDES L. Planted in a hedge at Camilla Lacey, Burford Bridge, Surrey, H. J. BURKILL.

626/1. VISCUM ALBUM L. "On a holly tree on a Cumberland fellside": letter to *The Yorkshire Post* quoted by Sutcliffe (1936).

†628/9. EUPHORBIA VIRGATA W. & K. Godalming, Surrey, v.-c. 17, G. M. ASH and J. CHAPPLE; Danbury, S. Essex, v.-c. 18, Mrs MACARTNEY-FILGATE, comm. Miss M. S. CAMPBELL.

†628/9b. Euphorbia virgata W. & K., var. esulifolia Thell. Near New Bridge, Berks, v.-c. 22, Mrs Barnes. Det. J. Chapple.

†628/10. Euphorbia Esula L. Roadside, Dagenham, S. Essex, v.-c. 18, looking very distinct from *E. virgata* when growing, A. H. Carter and H. S. Redgrove, comm. J. E. Lousley.

†628/11. Euphorbia Cyparissias L. Frilford Heath, Berks, v.-c. 22, Mrs E. C. Barnes; a large patch in a sloping meadow east of Bridgnorth road, 2 miles north of Kidderminster, *Worcester, v.-c. 37, P. M. Hall and N. D. Simpson.

628/14. Euphorbia Peplus L. Frequent, Kintyre, v.-c. 101, Latimer McInnes. [Add to *C.F.*, but not N.C.R., see *Top. Bot., Supp. i*, 74, " all except 78, 97, 102."—Ed.]

*†628/16. Euphorbia Lathyris L. Escape, Ballure, Kintyre, v.-c. 101, Latimer McInnes.

632/2. Mercurialis annua L. Abbotskerswell, S. Devon, v.-c. 3, A. Crawshaw, comm. G. T. Fraser; Barry Docks, Glamorgan, v.-c. 41, two plants over 3 feet in height, R. L. Smith.

633/2c. Ulmus nitens Moench, var. Hunnybuni Moss. Olchfa Glen, Glamorgan, v.-c. 41, Miss E. Vachell. Det. J. S. L. Gilmour and A. B. Jackson. [Add to *C.F.*, but not N.C.R., see *Welsh Flowering Plants*, 135 (1934).—Ed.]

*†634/1. Humulus Lupulus L. Carradale, Kintyre, v.-c. 101, doubtless introduced, Latimer McInnes.

637/1b. Urtica dioica L., var. angustifolia Wimm. & Grab. Bank of R. Loddon near Whistley Mill, Berks, v.-c. 22, E. C. Wallace.

†641/2. **Myrica cerifera** L. Specimens gathered by Lady Davy near Holmesley, S. Hants, v.-c. 11, were sent on to me by Mr J. E. Lousley. A small patch of this shrub, considerably damaged by fire, was shown to me in 1935 by Mr N. D. Simpson, to whom it had been known for some years. It is a native of N. America, first introduced to gardens in this country in 1699; it is presumed to have been bird-sown at Holmesley. The name is derived from the waxy covering of the fruits.—P. M. Hall.

*646/1. Quercus Robur L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

650/4. Salix triandra L. Wolborough Decoy, and Claypools, Kingsteignton, S. Devon, v.-c. 3, G. T. Fraser. Det. E. C. Wallace.

650/10f. Salix repens L., var. incubacea (L.). Chudleigh Knighton, S. Devon, v.-c. 3, 1934, G. T. Fraser. Det. J. Fraser.

650/10h. Salix repens L., var. parvifolia (Sm.). Chudleigh Knighton, S. Devon, v.-c. 3, 1934, G. T. Fraser. Det. J. Fraser.

650/10×9. Salix atrocinerea Brot. × aurita L. Wolborough Decoy, S. Devon, v.-c. 3, 1934, G. T. Fraser. Det. J. Fraser.

653/2. Ceratophyllum demersum L. Claypools, Kingsteignton, S. Devon, v.-c. 3, G. T. Fraser; Sowley Pond, S. Hants, v.-c. 11, N. D. Simpson.

664/2. Spiranthes spiralis (L.) C. Koch. Sandy slope, St Martin's, Isles of Scilly, v.-c. 1, J. E. Lousley; two plants in a field at Cold Ash, Berks, v.-c. 22, Miss A. M. Neild, first certain record for the Pang division of the county.

665/1. Goodyera repens (L.) R. Br. The present status of this species in the Carlisle district, Cumberland, v.-c. 70, is reviewed by Blezard (1936).

*668/3. Epipactis leptochila Godfery. Cornwood, S. Devon, v.-c. 3, known for several years but not identified as this species until 1935, E. Ward, comm. G. T. Fraser. Det. M. J. Godfery.

*668/4. Epipactis purpurata Sm. Near Launceston, E. Cornwall, v.-c. 2, Smith-Pearse, ex Thurston (1936; 38). [In Thurston, *loc. cit.*, there are two paragraphs apparently relating to the same locality. "*Helleborine violacea* (Bor.) Druce. 1. A fine plant with six big spikes in bed of the old canal near Launceston, Rev. T. N. H. Smith-Pearse," and "*Helleborine purpurata* Druce. 1. Abundant, and very fine, with *H. latifolia* Druce, on banks of disused canal, N. Tamerton, Rev. T. N. H. Smith-Pearse." I think this record should be accepted with some reserve, in view of possible confusion with *E. latifolia*, f. *purpurea* Čelak. But the mention of six spikes on one plant certainly suggests *purpurata*. Voucher specimens in support of the record are desirable.—Ed.]; Ampfield Wood, S. Hants, v.-c. 11, A. White, comm. P. M. Hall.

669/4. Orchis ustulata L. Near Albury, just in Bucks, v.-c. 24, one specimen seen, very rare in the county, J. Chapple, Sir Roger Curtis and D. B. Fanshawe.

669/6. Orchis pardalina Pugsl. Axmouth, Sidmouth, Bovey Tracey, Kingskerswell and Stoke-in-Teignhead, S. Devon, v.-c. 3, T. Stephenson.

669/6×8. Orchis pardalina Pugsl. × praetermissa Dr. Kingskerswell, S. Devon, v.-c. 3, T. Stephenson.

669/7×8. Orchis latifolia L. × praetermissa Dr. Heathfield, Bovey Tracey, S. Devon, v.-c. 3, A. Crawshaw, comm. and det. T. Stephenson.

669/8. Orchis praetermissa Dr. St Ouen's Pond and La Moie Golf-course, Jersey, J. Chapple. Det. P. M. Hall.

669/9. Orchis purpurella Steph. Delete * for v.-c. 87, *B.E.C. 1935 Rep.*, 42 (1936), see *B.E.C. 1925 Rep.*, 897 (1926); near Doune, W. Perth, v.-c. 87; Carie Burn, Lawers, Mid Perth, v.-c. 88, J. E. Lousley; Golspie, *E. Sutherland, v.-c. 107, Miss E. S. Todd; Bettyhill, *W. Sutherland, v.-c. 108; Reay, Caithness, v.-c. 109, J. E. Lousley; Thurso, Caithness, v.-c. 109, Miss E. S. Todd. All det. P. M. Hall.

669/10. Orchis maculata L. Delete * for v.-c. 87, *B.E.C. 1935 Rep.*, 42 (1936), see *B.E.C. 1925 Rep.*, 897 (1926); common, *Kintyre, v.-c. 101, Latimer McInnes and Mrs Macalister Hall.

669/10×8. Orchis maculata L. × praetermissa Dr. St Ouen's Pond, Jersey, J. Chapple; Heathfield, Bovey Tracey, S. Devon, v.-c. 3, T. Stephenson; Pengwern Common, Gower, Glamorgan, v.-c. 41, J. D. Grose. All det. P. M. Hall.

669/10×9. Orchis maculata L. × purpurella Steph. Near Doune, W. Perth, v.-c. 87, J. E. Lousley. Det. P. M. Hall.

669/11×8. Orchis Fuchsii Dr. × praetermissa Dr. Bovey Tracey; Orley Common, Ipplepen; Kingskerswell, S. Devon, v.-c. 3, T. Stephenson.

669/11×9. Orchis Fuchsii Dr. × purpurella Steph. Malham Tarn, Mid-West Yorks, v.-c. 64, W. A. Sledge.

*669/18. Himantoglossum hircinum (L.) Koch. Bures, N. Essex, v.-c. 19, 1919, ex Good (1936, 151); one plant found and picked by a school-child, Brenda Fenn, at Pitchpole, Letcombe Bassett, Berks, v.-c. 22, the second precise record for the county, comm. Mrs Barnes.

In Bucks, v.-c. 24, a specimen was found near Wendover in 1934 by a child of the Central School and in 1936 a "whole colony" of this plant was scythed down by an ignorant gardener also near Wendover: in 1935 a solitary specimen was found and gathered by a school-boy at Halton who has preserved it.—Sir R. Curtis.

674/1×669/8. Gymnadenia conopsea (L.) R. Br. × Orchis praetermissa Dr. Chudleigh Knighton, S. Devon, v.-c. 3, T. Stephenson. [I have seen the specimen and it was correctly named, a good example of this very rare bigeneric hybrid, which has previously only been recorded from S. Hants.—Ed.]

674/1b. Gymnadenia conopsea (L.) R. Br., var. densiflora (Wahl.) Lindl. Axmouth, S. Devon, v.-c. 3, Sir M. Abbot Anderson (det. T. Stephenson); Greywell, N. Hants, v.-c. 12, P. M. Hall and E. C. Wallace.

*†684/1. Narcissus Pseudo-narcissus L. Naturalised in many localities, Kintyre, v.-c. 101, Latimer McInnes.

684/3. Narcissus biflorus Curt. Woods at Newton, Monmouth, v.-c. 35; near Mainoaks Farm, Goodrich, Hereford, v.-c. 36, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales. [Add v.-c. 35 to *Com. Fl.*, but see *Welsh Flowering Plants* for earlier record.—Ed.]

*†685/1. Galanthus nivalis L. Naturalised in many localities, Kintyre, v.-c. 101, Latimer McInnes.

*†689/1. Ruscus aculeatus L. Introduced, Glenbarr Wood, Kintyre, v.-c. 101, Latimer McInnes.

†702/7. Allium triquetrum L. Bickleigh; near Tavistock; Stowford, near Ivybridge, S. Devon, v.-c. 3, E. Masson Phillips; three localities near Torquay, S. Devon, v.-c. 3, A. Crawshaw, comm. G. T. Fraser; long established about Bury St Edmunds Abbey grounds, *W. Suffolk, v.-c. 26, Miss E. Rawlins.

702/9. Allium oleraceum L. Marldon, A. Crawshaw, and Ipplepen, S. Devon, v.-c. 3, G. T. Fraser.

†704/1. Hyacinthus comosus L. Pembrey Burrows, Carmarthen, v.-c. 44, G. W. Hollis, comm. Dept. Bot., Nat. Mus. Wales.

707/1. Ornithogalum pyrenaicum L. Elbury, Churston Ferrers, S. Devon, v.-c. 3, E. Ward, comm. G. T. Fraser; field, Saundersfoot, *†Pembroke, v.-c. 45, J. E. Arnett, comm. Dept. Bot., Nat. Mus. Wales.

†707/2. Ornithogalum umbellatum L. Dawlish Warren, E. Ward, and Exmouth, S. Devon, v.-c. 3, G. T. Fraser; by stream just above Wooler, *Cheviotland, v.-c. 68 (Hull: *Vasc.*, *22*, No. 3, 118).

*†708/1. Lilium Martagon L. Now well established and frequent on the banks of the North Tyne above Chollerford and at Howford, also in woods near the banks of the Wansbeck and elsewhere in S. Northumberland, v.-c. 67 (Temperley: *Vasc.*, *22*, No. 3, 119).

709/1. Fritillaria Meleagris L. Little Tew, Oxon, v.-c. 23, Miss Olivia Baring. [On the border of districts 3 and 5 of the Flora; not previously reported from this part of the county.—J. Chapple.]

*†710/1. Tulipa sylvestris L. Old Hall Garden Wood, near C——, Cheshire, v.-c. 58, 1836, Herb. J. E. Bowman (1785-1841), still well

established, Dallman (1936 A, 160-1); near Doncaster, S.W. Yorks, v.-c. 63, Dallman (1936 A, 162); localities in N.E. Yorks, v.-c. 62, and Mid-West Yorks, v.-c. 64, are referred to by Flintoff (1936 D). [*Note.*—Add v.-cc. 62, 63 and 64 to *C.F.*, but not N.C.Rs.—Ed.]

718/14. Juncus compressus Jacq. Austwick, Mid-West Yorks, v.-c. 64, W. A. Sledge. [Add to *C.F.* See Lees' *Flora of West Yorkshire*, 452, 1888, for earlier record; although the area there stated is v.-c. 63 only, the Kilnsey record is for v.-c. 64.—Ed.]

†718/16. Juncus macer S. F. Gray. Heathfield, Bovey Tracey, S. Devon, v.-c. 3, T. Stephenson; plantation, Alderbury Common, *S. Wilts, v.-c. 8, Miss B. Gullick; grassy track, St Leonard's Forest, near Colgate, *W. Sussex, v.-c. 13, J. E. Lousley; sandy ground between Birtley and Urpeth, *Durham, v.-c. 66 (Heslop Harrison: *Vasc.*, *21*, 156, 1935).

*718/19. Juncus capitatus Wiegel. Raasay Island, v.-c. 104, new to Scotland, J. W. Heslop Harrison. Det. W. H. Pearsall. [It is most remarkable that this species should have been discovered in Raasay this year after last year's discovery of *J. pygmaeus*. This is not so great an extension of range on account of the intermediate locality in Anglesey.—Ed.]

718/21. Juncus triglumis L. Above Loch Maolach-coire, Inchnadamph, at 1250 feet, W. Sutherland, v.-c. 108, J. E. Lousley.

*718/22. Juncus biglumis L. Rock-ledges in eastern corrie, Aonach Beag, Lochaber, Westerness, v.-c. 97, doubtfully recorded in *Top. Bot.*, and bracketed as an error in *Com. Fl.*, R. Mackechnie and E. C. Wallace.

719/7. Luzula arcuata Wahl. West side of Aonach Beag, Westerness, v.-c. 97, in some quantity on wet grassy ground unlike its habitat in the Cairngorms, R. Mackechnie and E. C. Wallace.

*†719/9. Luzula albida DC. Inverness, Easterness, v.-c. 96, Miss E. S. Todd.

722/2. Sparganium ramosum Huds. Slapton Ley, S. Devon, v.-c. 3: considerable search in S. Devon with F. M. Day has only yielded this locality for the typical form, the usual form being var. *microcarpum* (Neum.).—G. T. Fraser. Confirmed by Kew. [Add to *C.F.*, but not N.C.R. *Top. Bot.*, *Supp.* i, 89, gives "3, Devon S., Beeby," for segregate.—Ed.]

*723/1b. Arum italicum Mill., var. immaculatum DC. Cwrt-yr-ala, Glamorgan, v.-c. 41, Miss E. Vachell. Det. A. J. Wilmott. New to Wales.

727/3. Lemna trisulca L. Exminster and Wolborough Decoy, S. Devon, v.-c. 3, G. T. Fraser.

*730/1. Alisma ranunculoides L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

737/4. Potamogeton coloratus Hornem. Fenny pool, Foulden Common, W. Norfolk, v.-c. 28, J. E. Lousley and G. Watts; Cregduff Lough, W. Galway, v.-c. H. 16, N. D. Simpson and P. M. Hall.

737/5. Potamogeton alpinus Balb. Canal, Whixall, Salop, v.-c. 40, J. E. Lousley and R. C. L. Burges.

737/9. Potamogeton gramineus L. Fruiting freely, Cropstone Reservoir, Leicester, v.-c. 55, J. E. Lousley and R. C. L. Burges.

737/11. ×Potamogeton nitens Weber. Thurso River, Caithness, v.-c. 109, Miss E. S. Todd. Det. R. W. Butcher.

*737/13. Potamogeton lucens L. River Wye, Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales; frequent, *Kintyre, v.-c. 101, Latimer McInnes.

737/15. Potamogeton praelongus Wulfen. Loch at the foot of Dun Caan, Raasay Is., v.-c. 104, J. W. Heslop Harrison and W. A. Clark (det. W. H. Pearsall); at 900 feet in Loch Mhaolach-coire, near Inchnadamph, W. Sutherland, v.-c. 108, J. E. Lousley.

*737/16. Potamogeton perfoliatus L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

737/16c. Potamogeton perfoliatus L., var. ovatifolius Wallr. Storr Rock Loch, Skye, v.-c. 104, J. W. Heslop Harrison and W. A. Clark. Det. W. H. Pearsall.

737/18. Potamogeton compressus L. Canal, Whixall, Salop, v.-c. 40, J. E. Lousley and R. C. L. Burges.

*737/20. Potamogeton obtusifolius M. & K. Exminster, S. Devon, v.-c. 3, G. T. Fraser. Det. Kew. [This species has been found previously in v.-c. 3 but not published. There is a specimen from Alphington in Herb. Hiern (det. W. H. Pearsall) and it was found in the canal between Alphington and Exminster by Miss Aviolet, c. 1932 (det. Kew). —G. T. Fraser. *Top. Bot.*, ed. ii, gives 3 in brackets as insufficiently vouched.—Ed.]

739/1. Zannichellia palustris L. Bradley Leet, Highweek, S. Devon, v.-c. 3, G. T. Fraser.

739/1b. Zannichellia palustris L., var. major Koch. Baglan, Glamorgan, v.-c. 41, Miss E. Vachell. Det. W. H. Pearsall.

746/8. Scirpus pauciflorus Lightf. Bovey Tracey and Broadsands, Churston Ferrers, S. Devon, v.-c. 3, G. T. Fraser.

*746/12. Scirpus filiformis Savi. Wimbledon Common, Surrey, v.-c. 17, 1922, Lousley (1936 A, 200).

746/12b. Scirpus filiformis Savi, var. monostachys Clarke & Marshall. La Seigneurie, Sark, Channel Islands, G. C. Brown; sea-coast, Silecroft, near Millom, *Cumberland, v.-c. 70, Mrs Foggitt and Hon. Marjorie Cross.

747/3. Eriophorum gracile Roth. Greywell, near Odiham, N. Hants, v.-c. 12, with *E. paniculatum* and *E. angustifolium*, E. C. Wallace. [A very welcome rediscovery; as far as I am aware this species has not been seen in this locality since its first discovery by Miss C. E. Palmer.—Ed.]

748/1. Rhynchospora fusca (L.) Ait. Moorland between Lochs Eil and Shiel, and by Loch Dubh Torr an Tairbeirt, Westerness, v.-c. 97; recorded from the latter place by the late C. E. Salmon; this is the second locality in the *County of Argyll*, since it is partly in Argyll and partly in W. Inverness, the county boundary running through Loch Dubh Torr, but the portion of Ardgour, Argyll, is included in v.-c. 97.—E. C. Wallace.

750/1. Cladium Mariscus R. Br. Wolborough Decoy, S. Devon, v.-c. 3 (now gone from Forde Bog and destroyed at Thurlestone), G. T. Fraser; Greywell, near Odiham, *N. Hants, v.-c. 12; Arisaig, Westerness, v.-c. 97, E. C. Wallace. [It is very remarkable that this species was not recorded from Greywell by the late Miss C. E. Palmer, since it grows within a few yards of *Eriophorum gracile* recorded by her.—Ed.]

753/6. Carex saxatilis L. Aonach Beag, Westerness, v.-c. 97, E. C. Wallace.

753/8. Carex lasiocarpa Ehrh. A few plants in flower, Holmesley Bog, S. Hants, v.-c. 11, where it has very seldom flowered recently, J. E. Lousley.

753/9d. Carex hirta L., var. spinosa Mort. Roadside near St Ives, Hants, v.-c. 31, J. E. Lousley.

*753/10. Carex pendula Huds. Glenhervie, Southend, Kintyre, v.-c. 101, Latimer McInnes.

753/11. Carex sylvatica Huds. Cnochan Rocks, W. Ross, v.-c. 105, at 800 ft., a very unusual habitat, J. E. Lousley.

753/12. Carex strigosa Huds. Crown Woods, near Monmouth, v.-c. 35, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales.

753/13. Carex helodes Link. Trislaig, Ardgour, Westerness, v.-c. 97, E. C. Wallace.

753/17. Carex distans L. The inland form in meadow near Marston Meysey, N. Wilts, v.-c. 7, J. E. Lousley; Greywell, N. Hants, v.-c. 12, J. E. Lousley, P. M. Hall and E. C. Wallace.

753/19. Carex fulva Host. Greywell, near Odiham, N. Hants, v.-c. 12, E. C. Wallace and P. M. Hall.

753/20b. Carex Oederi Retz., var. oedocarpa And. May Hill, Longhope, W. Gloster, v.-c. 34, F. M. Day. Det. E. Nelmes.

753/21. Carex lepidocarpa Tausch. Market Weston Fen, W. Suffolk, v.-c. 26; Foulden Common and Oxborough, W. Norfolk, v.-c. 28, J. E. Lousley; Mathon, Hereford, v.-c. 36; Broadheath Common, Wores, v.-c. 37; Llanfihangel-nant-Melan, *Radnor, v.-c. 43, F. M. Day. Det. E. Nelmes (last three records).

753/30. Carex montana L. Still to be found N.E. of Brockenhurst, S. Hants, v.-c. 11, in a clayey ride in a wood, J. E. Lousley and R. W. Butcher; seen at the station between Tunbridge Wells and Eridge, E. Sussex, v.-c. 14, whence it was first described as British by W. Mitten (*Phyt.*, 1845, 289-290), J. E. Lousley and J. P. M. Brenan.

753/31. Carex tomentosa L. In quantity in the water meadows near Marston Meysey, N. Wilts, v.-c. 7, in a station which agrees with the directions given by Teasdale when he discovered it there new to Britain in 1798, J. E. Lousley.

753/32b. Carex pilulifera L., var. longibracteata Lange. Fingle Bridge, Moretonhampstead; Hennock Reservoirs, Christow; Metherall Down, Lydford, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

753/35. Carex vaginata Tausch. Coire an t-Sneachda, Cairngorm, Easterness, v.-c. 96, at 3000 ft., J. E. Lousley.

753/36d. Carex panicea L., var. tumidula Laest. Leighon, Manaton, and Chudleigh Knighton, S. Devon, v.-c. 3; Defford Common, Worcester, v.-c. 37, F. M. Day.

753/38. Carex limosa L. Moel-y-Benmaen, Caernarvon, v.-c. 49, J. Rees, comm. Dept. Bot., Nat. Mus. Wales; a form closely resembling *C. magellanica* in leaves and bracts, but not that species, bog near Rannoch Station, Mid-Perth, v.-c. 88, J. E. Lousley.

753/47×49. Carex aquatilis Wahl. × Goodenowii Gay. By Loch Watten, and also by the Thurso River, near the Cemetery, Caithness, v.-c. 109, J. E. Lousley.

753/49. Carex Goodenowii Gay, forma pumila Kük. Radnor Forest, Radnor, v.-c. 43, F. M. Day. Det. E. Nelmes.

753/52. Carex elongata L. in Yorkshire. The Yorkshire records for this species are as follows:—

i. Aldwark, S.W. Yorks, v.-c. 63, 1803, J. Salt, see Lees, *Flora of W. Yorks*, 463, 1888, where it is said to have still existed in 1845 but to have been sought in vain in 1874-6.
ii. Boggy woods at Langwith, near York, S.E. Yorks, v.-c. 61, recorded in Baker's Supplement to Baines' *Flora of Yorkshire*, published in 1856. Stated to be extinct in Robinson, *Flora of E. Riding*, 46, 1902.
iii. Askham Bog, Mid-West Yorks, v.-c. 64, 1892, B. B. le Tall, confirmed by Arthur Bennett and rediscovered in 1936 (Sledge, 1936 B).
iv. Old Canal bed, near Cawthorne, S.W. Yorks, v.-c. 63, F. A. Lees' unpublished MS. notes. On being taken to the locality by the original discoverer, I found that the record was based on a misidentification.

Druce, *Comital Flora*, 339, 1932, gives the Yorkshire distribution of this species as 61, (62), 63, 64, but I have no idea on what the record " (62) " is based, unless the Cawthorne in v.-c. 63 has been confused with another place of the same name in v.-c. 62.

As far as is known, the species now only occurs in Yorkshire in v.-c. 64, the reference to v.-c. 62 should be deleted and the records for v.cc. 61 and 63 bracketed as extinct.—W. A. Sledge.

753/53c. Carex leporina L., var. capitata Sond. Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

753/53d. Carex leporina L., var. longibracteata Peterm. Leighon, Manaton, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

*753/54. Carex Lachenalii Schkuhr. Aonach Beag, Westerness, v.-c. 97, hitherto known in Britain only from Lochnagar and the Cairngorms in Eastern Scotland, R. Mackechnie and E. C. Wallace.

753/59c. Carex vulpina L., var. nemorosa (Rebent.) Lej. Exminster, Chudleigh Knighton, Abbotskerswell, Thurlestone, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

753/63b. Carex paniculata L., var. rigida Ar. Benn. Wolborough Decoy and Canal, Teigngrace, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

753/63d. Carex paniculata L., var. simplex Peterm. Wolborough Decoy and Canal, Teigngrace, S. Devon, v.-c. 3, G. T. Fraser. Det. F. M. Day.

753/65. Carex diandra Schrank. Greywell, near Odiham, N. Hants, v.-c. 12, E. C. Wallace.

753/67. Carex arenaria L. Guernsey and Herm, Channel Islands, G. C. Brown. [Given by Marquand for both islands but add " S " to *C.F.*—Ed.]

753/74b. Carex pulicaris L., forma montana Pugsl. Well marked on Cnochan Rocks, W. Ross, v.-c. 105, J. E. Lousley.

753/75. Carex dioica L. Heathfield, Bovey Tracey, S. Devon, v.-c. 3, A. Crawshaw, comm. G. T. Fraser.

†754/10. Digitaria sanguinalis (L.) Scop. Garden weed, Ampfield, S. Hants, v.-c. 11, A. White, comm. P. M. Hall.

†754/11. Digitaria ischaemum (Schreb.) Muhl.; *D. humifusa* Pers.; *Panicum lineare* Krocker *non* L.; *P. glabrum* Gaudin *non* L.; *Syntherisma glabrum* Schrad. In September 1936 Dr F. R. Elliston Wright showed me this grass under very " native " conditions in a sandy field behind the Burrows at Braunton, N. Devon, and stated that he had known it there for a number of years over a considerable area. This station is of considerable interest, as although the plant has been recorded from sandy fields in several counties in the south and east of England, this would appear to be the first record of it as a colonist in the west. *D. ischaemum* is on record from the following vice-counties, those where it has occurred in quantity on sandy soils being marked with an " s ":—v.-c.'s 1, 4s, 10, 11s, 13s, 16, 17s, 22, 23, 25s, 26s, 27s, 28s, 41, 60, 62, 83, 92. At Christchurch, S. Hants, and Heyshott Green, West Sussex, it appeared in quantity in 1850 and 1884, and 1921 respectively, but the subsequent history is not known. In Norfolk and Suffolk it has appeared at intervals over a long period of years in many stations and may be taken as a fairly constant, though extremely rare, feature of the flora of the Eastern Counties. In Surrey it was found " new to Britain " by Borrer prior to 1829 at Weybridge, and since that date it has been noticed many times within the Weybridge-Byfleet-Pyrford-Wisley area with a frequency which cannot be attributed to repeated introductions. Dr Wright states that at Braunton flowering is so late that it has no time to set seed before hard weather cuts it back. Many Surrey specimens have been collected in good flower in August and it is evident that seed does sometimes mature in good quantity otherwise the plant would not persist. *P. ischaemum* is a native of the warmer parts of Eurasia, whence it was introduced into America, where it has become a troublesome weed in lawns. In this country, however, it grows only in open associations, and apparently is unable to contend with the competition of other grasses.—J. E. Lousley.

*†756/2. Setaria viridis (L.) Beauv. Once only, waste ground, Campbeltown, Kintyre, v.-c. 101, Latimer McInnes.

758/2. Spartina stricta (Ait.) Roth. Landemere, Thorpe-le-Soken, N. Essex, v.-c. 19, J. E. Lousley and R. Melville.

*758/3. Spartina Townsendii H. & J. Groves. At least 100 plants on the mud flats of the R. Exe, Dawlish Warren, S. Devon, v.-c. 3, F. M. Day and G. T. Fraser (det. P. M. Hall); a patch introduced some years ago at Welwick on the Humber shore, *†S.E. Yorks, v.-c. 61, is spreading successfully, T. Stainforth, comm. W. A. Sledge.

†763/3. Sorghum cernuum Host. Sevenoaks, W. Kent, v.-c. 16, J. P. M. Brenan.

†765/5. Phalaris canariensis L. Plymouth Hoe, S. Devon, v.-c. 3, E. Masson Phillips; casual, Kintyre, v.-c. 101, Latimer McInnes.

777/2. Phleum alpinum L. Coire an t-Sneachda, Cairngorm, Easterness, v.-c. 96, at 3250 ft., J. E. Lousley.

†778/1. Mibora minima (L.) Desv. Near Wimborne, Dorset, v.-c. 9, Haines and Goddard, ex Hubbard (1936; 110). [Add to *C.F.*, but see *B.E.C. 1930 Rep.*, 377 (1931) for previous record.—Ed.]

†782/1. Polypogon monspeliensis (L.) Desf. Waste ground N.E. of gas works, Woking, Surrey, v.-c. 17, J. G. Lawn. [*C.F.* makes no distinction between native and adventive records of this species, and includes v.-c. 17. It appears from the *Flora of Surrey* that this species has been long extinct as a native of the county.—Ed.]

783/1. Calamagrostis epigejos (L.) Roth. Marshy meadow near Waltham St Lawrence, Berks, v.-c. 22, E. C. Wallace.

785/2. Apera interrupta (L.) Beauv. West Newton, W. Norfolk, v.-c. 28, about 30 miles north of nearest previously known locality, Thetford, Hubbard (1936, 111).

†788/1. Lagurus ovatus L. Now well established between the sand-dunes and golf course, Dawlish Warren, S. Devon, v.-c. 3, Miss Rosemary Hughes. First recorded from there in 1931, see *B.E.C. 1931 Rep.*, 677 (1932) [but there is a specimen in Herb. Torquay N.H.S., G. H. Douglas, 20th May 1930.—G. T. Fraser].

791/2. Deschampsia alpina (L.) R. & S. Ben Nevis and Aonach Beag, at high elevations, Westerness, v.-c. 97, R. Mackechnie and E. C. Wallace.

*794/3. Avena pratensis L. Frequent, Kintyre, v.-c. 101, Latimer McInnes.

795/1b. Arrhenatherum elatius (L.) M. & K., var. biaristatum (Peterm.) Dr. Mudstone, Brixham, S. Devon, v.-c. 3, G. T. Fraser. Det. T. Stephenson.

†797/1. Cynodon Dactylon Pers. In the enclosure near the race track, Brooklands, Surrey, v.-c. 17, Miss F. L. Stephens; by railway, south of Birtley, *†Durham, v.-c. 66 (Miss H. Heslop Harrison: *Vasc.*, *22*, No. 4, 150).

802/1f. Phragmites communis Trin., var. repens Meyer. Orecombe Point, Exmouth; Watcombe, Torquay; Goodrington, Paignton, S. Devon, v.-c. 3, G. T. Fraser (but see Abstracts p. 382).

*†808/1. Cynosurus echinatus L. Sandy Lodge, Northwood, Middlesex, v.-c. 21, casual, F. M. Day.

813/1g. Molinia caerulea (L.) Moench, var. viridiflora Lej. Broadheath, Worcester, v.-c. 37, W. H. Hardaker.

814/1. Catabrosa aquatica (L.) Beauv. Near Bures St Mary, W. Suffolk, v.-c. 26, Miss E. Rawlins. Det. W. H. Pearsall.

822/2. Briza minor L. St Martin's, Isles of Scilly; Tressaderne Farm, Ruan Major, W. Cornwall, v.-c. 1, J. E. Lousley.

*†824/1. Poa Chaixii Vill. Shrubbery, Ro Wen, near Conway, Carnarvonshire, v.-c. 49 (A. Wilson: *N.W. Nat.*, *11*, No. 4, 363).

824/3. Poa subcaerulea Sm. Sand dunes, Tenby, Pembroke, v.-c. 45, E. Brazier, comm. Dept. Bot., Nat. Mus. Wales.

*824/10. Poa compressa L. Once only, Kintyre, v.-c. 101, Lammer McInnes. Det. R.B.G., Edinburgh.

825/2b. Glyceria fluitans (L.) Br., var. triticea (Fr.) M. T. Lange. Kingskerswell, S. Devon, v.-c. 3, T. Stephenson.

Puccinellia Parl. All determined by P. Jansen.

*†825/4. Puccinellia distans (L.) Parl. About manure heaps, Laffan's Plain, near Aldershot, N. Hants, v.-c. 12, J. E. Lousley, P. M. Hall and E. C. Wallace.

825/4. Puccinellia distans (L.) Parl., forma virescens Jansen & Wachter. Corporation Dump, Hythe Quay, Colchester, N. Essex, v.-c. 19, J. E. Lousley and R. Melville.

825/4. Puccinellia distans (L.) Parl., forma angustifolia (Holmberg). N. Mersea Island, N. Essex, v.-c. 19, J. E. Lousley and A. L. Still; limestone quarry, Breedon Cloud Wood, Leicester, v.-c. 55 (as *G. distans* Wahl., var. *obtusa* Parn., see *Journ. Bot.*, 1903, 59), A. B. Jackson and T. E. Routh.

825/4. Puccinellia distans (L.) Parl., ad var. litoralis Hack. vergens. Chidham, W. Sussex, v.-c. 13, J. E. Lousley and E. C. Wallace.

825/4b. Puccinellia distans (L.) Parl., var. prostrata Beeby. Isle of Grain, W. Kent, v.-c. 16, J. E. Lousley.

825/4×8. Puccinellia distans (L.) Parl. × rupestris (With.) Fernald & Weatherby. Canal side near Higham, W. Kent, v.-c. 16, 1899, A. H. Wolley-Dod (see p. 234); comm. J. E. Lousley.

825/5. Puccinellia maritima (L.) Parl. Banks of Thurso River, near Thurso Bridge, Caithness, v.-c. 109, J. E. Lousley.

825/5. Puccinellia maritima (L.) Parl., ad forma major Holmb. vergens. Isle of Grain, W. Kent, v.-c. 16, J. E. Lousley.

825/5. Puccinellia maritima (L.) Parl., ad forma nana Lange vergens. Isle of Grain, W. Kent, v.-c. 16; Ullapool, W. Ross, v.-c. 105, J. E. Lousley.

825/8. Puccinellia rupestris (With.) Fernald & Weatherby. Manhood End, near Birdham, W. Sussex, v.-c. 13, J. E. Lousley and E. C. Wallace.

826/1c. Scleropoa rigida Griseb., var. patens Coss. & Dur. Cultivated field, St Mary's, Scilly Isles, v.-c. 1, 1934, Miss E. S. Todd. Det. C. E. Hubbard.

826/7e. Festuca rubra L., var. glaucescens H. & H. West Mount, Jersey, J. Chapple; with hairy spikelets, Brora Sands, E. Sutherland, v.-c. 107, Miss E. S. Todd. Det. W. O. Howarth.

826/9f. Festuca ovina L., var. glauca (Lam.) How. [=826/14. F. glauca Lam. of *British Plant List*, ed. 2.]. Guernsey, Lady Davy; Budleigh Salterton and Churston Ferrers, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson. Det. W. O. Howarth.

826/11a. F. longifolia (Thuill.) How., var. **genuina** (Hack.) How., sub-var. villosa (Hack.) How. Dornoch, E. Sutherland, v.-c. 107, Miss E. S. Todd. Det. W. O. Howarth.

826/15. Festuca membranacea (L.) Dr. Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser (det. T. Stephenson); sea shore, Seascale, *Cumberland, v.-c. 70, W. A. P. Sprott (det. W. O. Howarth).

*826/18. Festuca Myurus L. Occasional on walls, Kintyre, v.-c. 101, Latimer McInnes.

†826(2)/1. Nardurus maritimus (L.) Janchen. Wall-top, Torbryan, near Newton Abbot, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson. With native species, Littlestone-on-Sea, E. Kent, v.-c. 15, 1909 (Lady Davy); in great plenty, with *Festuca sciuroides*, Carlby, S. Lincs, v.-c. 53, 1903 (A. Woodruffe-Peacock); this grass

has a wide distribution in the Mediterranean Region, extending to N. France and Belgium; it may be an introduction but its general distribution suggests that it is a native species.—Hubbard (1936, 109-110).

*827/3. Bromus sterilis L. Local, Kintyre, v.-c. 101, Latimer McInnes.

*827/7. Bromus erectus Huds. Near Saints Bay, Guernsey, new to the Channel Islands, G. C. Brown.

*827/19(2). Bromus lepidus O. R. Holmberg. Denbury, S. Devon, v.-c. 3, I. A. Williams; Kingskerswell, S. Devon, v.-c. 3, T. Stephenson; delete * for v.-c. 9, *B.E.C. 1935 Rep.*, 47 (1936), see *B.E.C. 1929 Rep.*, 146 (1930); Topcliffe, N.E. Yorks, v.-c. 62, Miss C. M. Rob and W. A. Sledge.

827/21. Bromus interruptus Dr. Sainfoin field, Upper Halling, W. Kent, v.-c. 16, J. E. Lousley and J. P. M. Brenan.

828/2. Brachypodium pinnatum (L.) Beauv. Churston Ferrers, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson.

828/2b. Brachypodium pinnatum (L.) Beauv., var. pubescens S. F. Gray. Churston Ferrers and Kingskerswell, S. Devon, v.-c. 3, G. T. Fraser and T. Stephenson.

830/4e. Agropyron repens L., var. lasiorachis Hack. Aberthaw, Glamorgan, v.-c. 41, Miss E. Vachell.

†832/11. Aegilops cylindrica Host. Tanfield, N.W. Yorks, v.-c. 65, W. A. Sledge.

832(2)/2. Pholiurus incurvus (L.) Schinz & Thell. The following occurrences are listed by Hubbard (1936, 111-3), where it is suggested that there is strong evidence for supposing this species to be native in all except the Warwick, Glamorgan, Cheshire, and probably also the N. Essex, localities:—

Isle of Wight, v.-c. 10: Freshwater Gate, c. 1830 (Tyacke); Freshwater, 1919 (Britten and Groves); near St Catherine's Point, 1932 (Sprague and Hubbard).

West Sussex, v.-c. 13: Near Southwick, 1923, with *P. filiformis* (Lady Davy).

East Sussex, v.-c. 14: Seaford, 1908, with *P. filiformis* (Sherrin); between Seaford and Newhaven, 1924 (Sheldon, ex *Rep. Wats. B.E.C. for 1924-5*, 320); undercliff west of Newhaven, 1931 (Lousley).

South Essex, v.-c. 18: Canvey Island, 1848 (Ball).

North Essex, v.-c. 19: Langenhoe, in immense quantity, confined to spots covered by old heaps of chalk unloaded from barges, *P. filiformis* also occurring but on undisturbed soil, 1926 (Brown).

East Suffolk, v.-c. 25: Dunwich (Holmes, ex Hind, *Fl. Suff.*, 414, 1889).
West Norfolk, v.-c. 28: Snettisham, with *Festuca rottboellioides*, 1922 (Little, ex *Rep. Wats. B.E.C. for 1922-3*, 231); between Snettisham and Heacham, with *P. filiformis*, 1935 (Hubbard).
Warwick, v.-c. 38: Kenilworth, waste ground near the skin yards, 1902 (Jackson).
Glamorgan, v.-c. 41: Cardiff Docks, 1904 (Druce).
Cheshire, v.-c. 58: Birkenhead, on ballast, 1876 (Burton).

841/1. PINUS SYLVESTRIS L. Frequent, Kintyre, v.-c. 101, LATIMER MCINNES. [Add to *C.F.*, but not N.C.R., see *Top. Bot.*, *Supp.* i, 77.—ED.]

844/1b. EQUISETUM TELMATEIA Ehrh., var. SEROTINA (A. Braun) Milde. Aylesbeare, Watcombe, Torquay, S. Devon, v.-c. 3, G. T. FRASER.

844/3b. EQUISETUM SYLVATICUM L., var. CAPILLARE Hoffm. Between Minstead and Minstead Newton, S. Hants, v.-c. 11, Lady DAVY.

844/5b. EQUISETUM LIMOSUM L., var. FLUVIATILE (L.) Hornem. Near Lyndhurst, S. Hants, v.-c. 11, Lady DAVY.

844/6b. EQUISETUM PALUSTRE L., var. POLYSTACHYUM Weig. Bantham, S. Devon, v.-c. 3, G. T. FRASER.

844/9. EQUISETUM VARIEGATUM (Schleich.) Weber. In boggy ground between the head of Gordale and Malham Tarn, and also in smaller quantity in bog east of the Tarn, Mid-West Yorks, v.-c. 64, 8th July 1936. The only station given for this species in Lees' *Flora of West Yorkshire* is Rev. W. Howson's record in 1850 from Swarth Moor, between Austwick and Horton-in-Ribblesdale. But Lees had overlooked a previous record by Jas. Backhouse in *Phyt.*, I, 1126 (November 1844), where in an account of a walk from Settle to Arncliffe on 11th July 1844 *E. variegatum* is included amongst the plants seen above the head of Gordale and towards Malham Tarn.—Sledge (1936 C).

844/9d. EQUISETUM VARIEGATUM Schleich., var. ARENARIUM Newm. Ross Links, Cheviotland, v.-c. 68, R. B. COOKE and J. W. HESLOP HARRISON. [The only other previous record for v.-c. 68 is from Holy Island, 1883, *Hist. Berw. Nat. Club*, *9*, 258, on which was based the record in *Top. Bot.*, *Supp.* i, and in *Com. Fl.*—G. W. TEMPERLEY.]

851/1. ASPLENIUM MARINUM L. Fronds (including stipes) 90 cm. in length on rocks about 50 yards from the coast, St Agnes, Isles of Scilly, v.-c. 1, J. E. LOUSLEY.

851/5c. Asplenium Adiantum-nigrum L., var. serpentini Tausch. Lizard, W. Cornwall, v.-c. 1, J. D. Grose. "I think this is right but I have not seen it so large before."—F. W. Stansfield.

853/2. Athyrium alpestre Rylands. Abundant among boulders at 3500 ft., Coire an t-Sneachda, Cairngorm, Easterness, v.-c. 96, J. E. Lousley.

856/11. Phegopteris Robertiana Braun. Add * for v.-c. H. 17, *B.E.C. 1935 Rep.*, 48 (1936).

*857/1. Cystopteris montana (Lam.) Desv. Aonach Beag, Westerness, v.-c. 97, E. C. Wallace.

864/1b. Osmunda regalis L., var. cristata Moore. Bog near Charbeston Road, Pembroke, v.-c. 45, J. E. Arnett, comm. Dept. Bot., Nat. Mus. Wales. Det. A. E. Wade. See p. 235.

865/1b. Botrychium Lunaria Sw., var. incisum Milde. Growing with the typical form near Washford, Swaledale, N.W. Yorks, v.-c. 65, A. Turner. Det. Kew.

870/5. Lycopodium clavatum L. Houghton Woods, S.E. Yorks, v.-c. 61, very scarce in this vice-county, T. Stainforth, comm. W. A. Sledge.

870/6. Lycopodium inundatum L. Dawlish Warren, S. Devon, v.-c. 3, G. T. Fraser.

Characeae. All determined by G. O. Allen, except where indicated.

872/2. Nitella opaca Ag. Leighon, Manaton, S. Devon, v.-c. 3, G. T. Fraser; Loch Brora, E. Sutherland, v.-c. 107, Miss E. S. Todd; L. Tully, near Renvyle, W. Galway, v.-c. H. 16; left bank of R. Shannon, Lanesborough, *Longford, v.-c. H. 24; L. Levally, W. Mayo, v.-c. H. 27, N. D. Simpson and P. M. Hall.

872/3. Nitella flexilis Ag. Stream near Mullaghveale, Cloghane, S. Kerry, v.-c. H. 1, N. D. Simpson and P. M. Hall. Det. N.D.S.

872/5. Nitella translucens Ag. Chudleigh Knighton, S. Devon, v.-c. 3. G. T. Fraser; Keston, *W. Kent, v.-c. 16 (Allen, 1936).

876/2. Chara canescens Lois. Birchington marshes, E. Kent, v.-c. 15 (Allen, 1936).

876/3. Chara vulgaris L. Near Thurso. Caithness, v.-c. 109, Miss E. S. Todd.

*876/3e. Chara vulgaris L., var. crassicaulis Kütz. Quarry-pool, Campbeltown, v.-c. 101, Latimer McInnes. [N.C.R. for species and first record of the variety for Scotland.—Ed.]

876/7. Chara contraria Kuetz. Bog ditches near Kildare, v.-c. H. 19, N. D. Simpson. Det. N.D.S.

*876/12. Chara aspera Willd. Loch Watton, Caithness, v.-c. 109, sterile plants, Miss E. S. Todd.

876/12b. Chara aspera Willd., var. subinermis Kuetz. L. Keel, Achill I., W. Mayo, v.-c. H. 27, N. D. Simpson and P. M. Hall. Det. N.D.S.

876/13. Chara desmacantha Gr. & B.-W. Brittas Lough, Westmeath, v.-c. H. 23, N. D. Simpson and P. M. Hall. Det. N.D.S.

*876/17. Chara delicatula Ag. Exminster marshes, Preston and Claypools, Kingsteignton, Leighon, Manaton, Chudleigh Knighton, S. Devon, v.-c. 3, G. T. Fraser; Ardnoe Point, near Crinan, Argyll, v.-c. 98, N. D. Simpson (det. N.D.S.); Loch Doula, near Lairg, *E. Sutherland, v.-c. 107, Miss E. S. Todd; Brittas Lough, Westmeath, v.-c. H. 23 (det. N.D.S.); L. Levally, *W. Mayo, v.-c. H. 27, N. D. Simpson and P. M. Hall.

THE STUDY OF PLANT-GEOGRAPHY.

RONALD GOOD.

Plant-geography, that is to say the study of the manner in which plants are distributed over the world's surface, has strong claims to be regarded as the oldest of all botanical interests. The character of vegetation has always been one of the chief environmental determinants and the differences observable in plant life from place to place must have been one of the very first features of his surroundings to make an impression upon the wakening intelligence of early man. At first no doubt the impression was but slight, but as the human race multiplied and became more precise in its requirements so the limitations imposed by the distribution of plants became rapidly intensified. Above all it became the directional control when the pressure of human numbers set in motion that endless series of migrations that form the main fabric of human history.

How this control may be effective is seen well in the early history of our own country. A great band of chalk uplands runs like a rampart almost the whole length of England and is flanked on either side by wide areas of marshy lowlands. These latter were covered, in the ancient days, by dense forest, and formed an almost insurmountable obstacle to human penetration. The chalk on the other hand bore a predominantly grass vegetation, which offered no such difficulties. It is therefore not surprising that the first cultures of England are largely confined to this chalk belt and that hundreds of years elapsed before the descendants of these earlier peoples were sufficiently sure of themselves and of their powers to enter and colonise the lowlands.

Actually the importance of the chalk grasslands was two-fold. Not only did they afford an oasis of country suitable for human settlement, but, by their outline and direction, provided a path for human movement far into the north of the country. Thus to the vegetation of the chalk is largely due the great development of some of the ancient British races, and but for it the history, and perhaps the destinies, of the land we now call England might have been very different.

From a more scientific point of view also plant-geography was one of the first subjects to receive attention because of the great differences of the flora and vegetation of various parts of the world recorded by the earlier world-navigators and explorers. Thus began the first phase of scientific plant-geography, the description of floristic and vegetational types and the plotting of the distributions of these and of the chief kinds of plants over the surface of the world as a whole. The painting of this picture of world vegetation, as it may be described, was naturally a long process, and moreover one whose completion had necessarily to await the fulfilment of geographical exploration, and it is in fact still being painted, although more recent work may be justly regarded as giving the finishing touches.

As the more purely descriptive part of plant-geography became more fully understood and more familiar, interest began to shift towards the ecological side, that is to say increasing attention came to be paid to the study of the *conditions* under which different plants occur, and the environments which they occupy. In short, botanists began to consider, not only where certain plants are to be found, but why they are to be found there. This initiated what may be called the second or modern phase of plant-geography. Its aim is to paint, not a picture of vegetation, but one, as complete as possible, of the conditions and factors which determine whether or not a plant shall be found growing naturally in a particular spot—a picture of the causes which underlie the geographical presence and absence of plant species.

As in so many other aspects of human knowledge and activities, the change has been from the extensive to the intensive. A single person may be able to describe the world vegetation fairly adequately, but it is certainly beyond the powers of one individual, and indeed beyond his span of life, to study it all in any appreciable detail. More intensive attacks must be made on a more limited front, and hence it is that much of the most recent work takes the form of detailed investigations into the distribution of plants over comparatively small areas.

But within this intensive work there are still the two aspects, geographical and ecological, and they are very closely connected in the sense that without the former the latter can hardly be considered. To put the point rather differently, it is essential to know what the habitat and environment of a plant *is* before it can be studied, and this can only be determined when it is known exactly where the plant is to be found. A detailed knowledge of actual distribution is therefore an essential preliminary to any consideration of the reasons for it. The effects must be studied before suggestions can be made as to their causes. Studies in plant-geography therefore involve two quite distinct processes, the first being the collection of adequately detailed information about the actual distribution of the species or other group which is the subject of investigation, and second, the elucidation of the conditions associated with this distribution. It is especially with regard to this double nature of the work that this article has been written.

The love of flowers is a well-known and often-quoted trait of the Englishman, and this trait commonly finds expression either in gardening or in a particular interest in wild plants, and it is perhaps true to say that the number of those who take a real and intelligent interest in their native flora is greater in England than in any other country. Nowhere does the amateur botanist flourish more.

Unfortunately many aspects of botany require so much equipment and such a knowledge of scientific matters in general as to make their study possible only to professional botanists. On the other hand, some aspects of the subject are particularly suitable for amateur study, but for reasons not altogether clear this has been interpreted in the past in rather a narrow sense, and amateur work has been in fact prac-

tically confined to systematic botany, and the British flora has been studied almost exclusively on this basis.

The study of systematics is as essential to the science of botany as a whole as is any other of its constituent parts, but from the point of view of the British field botanist it has one rather serious handicap. This is that the flora of Britain, and even more so of individual counties, is small, and anyone with sufficient leisure and interest can in a fairly short time reach a stage of familiarity with it and a point at which fresh fields of interest are needed, and it usually happens in these circumstances that the person concerned either begins to specialise on one particular group or genus or else leaves botany for some other pursuit.

The study of plant-geography, especially in its narrower sense, affords an alternative to either of these courses. Our intensive knowledge of the distribution of plants, however complete our extensive knowledge may be, is still very incomplete, and until we know more about this problem of "where" the subsequent problem of "why" cannot be properly attacked.

It is just with regard to the collection of this detailed distributional knowledge that the amateur field botanist is in a particularly favourable position. On the one hand, such work does not require expensive equipment nor specialised knowledge; on the other hand, it does need a working knowledge of the British flora, time and opportunity. This difference is more often than not the difference in situation between the professional and the amateur botanist, and the three requisites mentioned are precisely those most often possessed by the latter. To familiarity with the British flora there should perhaps be added familiarity with maps and map-reading, which is easily acquired: time needs no explanation: opportunity is chiefly that provided by residence in suitable country districts.

It cannot be too much stressed that those possessing these advantages can do a great deal of work on geographical lines which is of real scientific value, and likely to be of the greatest assistance to research workers less favourably situated. The question is how can this work best be done and what are the most pressing problems awaiting investigation? The answer is that there are so many lines open that a decision as to which shall be followed may be made almost entirely a matter of personal inclination. Almost the only general principle to be borne in mind is that the available area should be utilized to the best possible advantage, and that the work chosen should be such as can be most appropriately undertaken in the local conditions. If transport is no problem it may well consist of tracing out the distribution of a number of species over one and the same region so that they can be compared accurately on a geographical basis. A large scale study on these lines is at present being carried out by the writer in the County of Dorset. The distributions of as many species as possible are being traced out over the whole county, which is very varied, and maps are gradually being prepared of these distributions in such a way that they may

be easily and accurately compared. This is being done in the anticipation that this comparison will, when complete, present the geographical differences between the species in such a way as to throw considerable light on the actual factors which are responsible for them. More work of this kind, and it can be done both conveniently and satisfactorily on a much smaller scale, is badly needed. It would, for instance, later on be illuminating to compare the distributions of certain species in Dorset with distributions of the same species in some other English county where the external conditions are very different. Work of this kind can also be done on a parish scale and in different parts of one county.

Alternatively the distribution of a single species over a given area can be worked out in detail. For example, in almost every county there occur specific limits, that is to say lines beyond which a species does not extend, and some counties like those of the North Midlands are especially rich in this way. Where *exactly* do these specific lines run? What really are the limits of the species and how do they compare with conditions within the area?

More intensive methods are equally promising. Very little is known about the constitution of plant populations. In a patch of wood, for instance, how exactly are the different constituent species distributed? Why are some dominant, others local, and still others merely occasional? What are likely to be the factors of importance in determining the ultimate competition between species? The queries are almost endless, and so imperfect is our knowledge that almost any collection of ordered facts will add to it.

Another and rather different direction in which the resident country botanist has special opportunities is in making perennial observations. For many reasons this work is seldom touched and offers a wide field. To take but one point. To what extent do the ranges of species vary from year to year, and what may be the causes of this?

To continue further in this strain is unnecessary, and quite enough has been said to show how much there is to do and how easily something of worth can be done. In short, plant-geography is, in many ways, an ideal subject of study for the amateur botanist who loves wild plants not only for their own sake, but also as a means of scientific expression. In it he will find scope for all those inclinations and interests which attract him to the more purely scientific side of botany, but, in addition, he will find in it an enormous and almost virgin field of investigation and a pursuit in which the acquisition of useful knowledge is almost unlimited.

If the hopes of the writer are realized and this short account of plant-geography and its possibilities as a study induces some of those who read this article to take up its pursuit, he will be only too glad of the opportunity of giving any other information on the subject that may be desired.

THE FLORA OF THE INNER HEBRIDEAN ISLANDS, RAASAY, SOUTH RONA, SCALPAY, FLADDAY, AND LONGAY.

J. W. Heslop Harrison, D.Sc., F.R.S.

During the past three summers certain members of the staff of the Department of Botany, Armstrong College (University of Durham), have spent considerable periods in investigating the Flora and Fauna of the Isle of Raasay and its neighbours, South Rona, Scalpay, Fladday, Longay, and Eilean Garbh, all situated in the Inner Hebrides, and lying between Skye and Ross-shire. As the floristic, although not the ecological, survey has been brought to a close, the present seems a fitting opportunity for surveying the results of our labours.

Of the islands named, Raasay is by far the largest, for it possesses a length of thirteen miles and a maximum breadth, at Oskaig, of three. Geologically speaking, it may be regarded as falling into three sections.

The first, toward the north of Brochel, is built of a mass of Lewisian Gneiss, although Fladday, lying immediately to the west, consists of Torridonian Sandstones. South of this division, and extending to Screapadal in the east, and Holoman in the west, Torridonian Sandstones recalling those of Fladday are encountered. Succeeding this, again to the south, are huge areas of rocks of Mesozoic and Tertiary age which provide, even in the heavily glaciated granophyre still occupying the Holoman-Oskaig-Dun Caan triangle, some of the grandest scenery in the Island. Here are available for study enormous outcrops of the most striking and best preserved Mesozoic rocks in Scotland; they are worthy of visit by all interested in Geology. Fringing this area, on the eastern coast, are magnificent, rugged precipices, rising abruptly from the sea to heights of over 1000 feet, and even higher as they approach the highest point in the island, Dun Caan (1456 feet).

On these cliffs seem to be assembled nearly all the rarest and most important species, for here are to be found not only Alpine and calciphile plants like *Salix herbacea*, *Silene acaulis*, *Dryas octopetala*, *Draba incana*, *Arabis petraea*, *Saxifraga hypnoides*, *S. aizoides*, *Epipactis atropurpurea*, *Gymnadenia conopsea*, etc., but also common English plants like *Lychnis dioica*, *Geum urbanum*, *Geranium lucidum*, *Petasites oratus*, *Listera ovata*, *Phalaris arundinacea*, *Carex vulpina*, etc., all of which are rare in, or absent from, v.-c. 104 and v.-c. 105.

To the north of Raasay, orientated more or less roughly in a north-east to south-west direction, and looking from the sea like an undulating mass of rock, stretches South Rona, with a length of four miles and a breadth of one and a quarter. In its geology it repeats that of Northern Raasay, for it is composed of Lewisian Gneiss intersected by Tertiary dykes of varying types.

South of Raasay and separated from it by Caol Mohr, Scalpay, the "Ship" Island, rises darkly. This island at first sight seems much less rugged than Raasay and, from its geological standpoint, not so varied.

Moreover, closer examination to a certain extent confirms this view, as the bulk of it consists of Torridonian Sandstones. Nevertheless, Scalpay and Pabbay Shales, interspersed with basalts and granophyre sills, and even outcrops of limestone, appear and exercise an influence on plant distribution.

The other island, Longay (also the "Ship" Island!), with a length of one mile, is composed almost solely of red Torridonian Sandstones, with a few igneous intrusions at intervals.

As was to be anticipated, the climate of all the islands is moist and exceedingly equable, but emphatically less damp than would be expected from their position and from a consideration of the rainfall of Skye and West Ross-shire. Recent records on Rona, taken at the Lighthouse, show an average annual precipitation of 32 inches, whilst that of Raasay is even less. Similarly, the sunshine records are quite favourable, since the bulk of the rain falls during the winter months. The general mildness of the climate is best appreciated by reference to the well-grown Eucalyptus plants on Raasay, and to the peaches ripening out of doors on Scalpay.

Attaching due weight to the varied geology of the islands, and to their mild climate, one cannot therefore be surprised at the richness of their flora, or at the occurrence within their limits of many plants of southern and south-western proclivities. This is, of course, in harmony with the indications of Arachnida as exemplified by *Drassodes pubescens*, *Zelotes latreillii*, *Z. apricorum*, and *Xysticus pini*, of Coleoptera as shown by *Aulonogyrus striatus*, and of Lepidoptera such as *Taeniocampa gracilis* and *Omphaloscelis lunosa*.

The most remarkable members of this southern group of plants collected by us were *Cicendia pusilla*, new to Great Britain, and *Juncus pygmaeus* and *J. capitatus*, both new to Scotland. All three were discovered in Southern Raasay, and at least two of them, *Cicendia pusilla* and *Juncus capitatus* seemed perfectly at home in their special habitat. Unfortunately, it appears likely that *Juncus pygmaeus* was brought with a collection of Junci made indiscriminately by a student, so that its exact station is unknown; still it can be stated, with certainty, that it lies between Oskaig and Holoman.

Including species, segregates in critical groups, and hybrids, but excluding varieties, 603 forms were collected, which is obviously a noteworthy figure for a small area situated so far north. Of these, 49 forms appertained to the genus *Rosa*, 12 to *Rubus*, 14 to *Hieracium*, and corresponding numbers to other similar genera. If obvious intruders and segregates in the major critical groups are ignored, the list includes 58 species new to v.-c 104, and 54 which fail to find a place in Druce's *Flora of West Ross*. The following list displays the new vice-county records:—

Ranunculus reptans.
R. auricomus.
Nuphar pumila.
Nymphaea occidentalis.
Erophila verna.
Viola sylvestris.
Arenaria trinervia.
Hypericum dubium.

†*Vicia angustifolia.*
Prunus avium.
Rubus caesius.
Geum urbanum.
Alchemilla minor.
Agrimonia odorata.
Sorbus rupicola.
Myriophyllum spicatum.
Callitriche vernalis.
Lythrum Salicaria.
Epilobium tetragonum.
†*Circaea alpina.*
Adoxa Moschatellina.
Galium palustre.
†*Valeriana officinalis.*
Inula Helenium.
Matricaria suaveolens.
Arctium nemorosum.
Vinca minor.
Cicendia pusilla.
Symphytum tuberosum.
Myosotis palustris.
M. brevifolia.
Orchis purpurella.
O. Fuchsii.
Polygonatum multiflorum.
Paris quadrifolia.
Juncus pygmaeus.
J. capitatus.
J. maeer.
Luzula pilosa.
Typha latifolia.
Sparganium simplex.
Potamogeton pectinatus.
P. filiformis.
Ruppia maritima.
Cladium Mariscus.
Carex distans.
C. vesicaria.
Calamagrostis epigeios.
Glyceria declinata.
Bromus sterilis.
B. commutatus.
Asplenium septentrionale.
Hymenophyllum tunbridgense.
Lycopodium inundatum.
L. annotinum.
Chara aspera.
C. vulgaris.
Nitella translucens.

†The species marked thus are additions to *Comital Flora* for v.-c. 104 but not strictly N.C.R.S, since they are recorded for v.-c. 104 in *Top. Bot.* or one of its Supplements.—ED.

If the preceding list be considered in connection with that of West Ross-shire, as set out by Druce, it will be found to include the principal plants now recorded for the first time for v.-c. 104 and not yet detected in v.-c. 105. Further, *Eupatorium cannabinum*, *Scutellaria minor*, *Epipactis atropurpurea* and *Carex vulpina*, discovered on the islands by us, and previously on record for v.-c. 104, are still important absentees from West Ross. On the other hand, *Vicia angustifolia*, *Geum urbanum*, *Adoxa Moschatellina*, *Myriophyllum spicatum*, *Myosotis palustris*, *Cladium Mariscus*, *Luzula pilosa*, *Sparganium simplex* and *Carex distans*, recorded for v.-c. 105 by Druce, are now signalled for the first time from v.-c. 104.

Turning now to peculiarities in distribution observed within the islands, several features seem to need emphasis. Eight species (with two new county records), *Ranunculus hederaceus*, *Lythrum Salicaria*, *Erythraea Centaurium*, *Carduus nutans*, *Salicornia europaea*, *Atriplex glabriuscula*, *Potamogeton natans* and *Cladium Mariscus* are confined to South Rona; fourteen (with nine new county records), *Ranunculus scoticus*, *Nuphar pumila*, *Subularia aquatica*, *Viola segetalis*, *Prunus Padus*, *P. avium*, *Rosa spinosissima*, *Adoxa Moschatellina*, *Viburnum Opulus*, *Myriophyllum spicatum*, *Paris quadrifolia*, *Glyceria declinata*, *Hymenophyllum tunbridgense* and *Lycopodium annotinum* to Scalpay, whilst on Raasay 113 species were obtained which escaped notice on the adjoining islands. The latter are given in the appended list:—

Ranunculus reptans.
R. bulbosus.
Nymphaea occidentalis.
Nasturtium officinalis.
Arabis petraea.
Draba incana.
Erophila verna.
Cochlearia groenlandica.
Sisymbrium Thalianum.
Brassica arvensis.
Lepidium Smithii.
Viola sylvestris.
V. canina.
Silene Cucubalus.
S. maritima.
S. acaulis.
Arenaria trinervia.
Hypericum dubium.
H. tetrapterum.
H. humifusum.
Geranium dissectum.
G. lucidum.
Cytisus scoparius.
Medicago lupulina.
Trifolium hybridum.
T. dubium.
Anthyllis Vulneraria.
Vicia hirsuta.
V. sativa.
V. angustifolia.
Rubus caesius.
Dryas octopetala.
Geum urbanum.
Potentilla sterilis.
Alchemilla alpestris.
Agrimonia odorata.
Sorbus rupicola.
Saxifraga aizoides.
S. hypnoides.
Parnassia palustris.
Callitriche vernalis.
C. stagnalis.
Conopodium majus.
Anthriscus silvestris.
Caucalis Anthriscus.
Tanacetum vulgare.
Pelasites ovatus.
Vaccinium Vitis-idaea.
Pyrola minor.
P. secunda.
Anagallis arvensis.
Cicendia pusilla.
Gentiana campestris.
Symphytum tuberosum.
Myosotis sylvatica.
M. palustris.
Calystegia sepium.
Linaria Cymbalaria.
Veronica montana.
V. Beccabunga.
Orobanche rubra.
Galeopsis speciosa.
Lamium purpureum.
L. mollucellifolium.
Polygonum viviparum.
Rumex longifolius.
Salix fragilis.
S. phylicifolia.
Listera ovata.
Epipactis atropurpurea.
Orchis mascula.
O. incarnata.
O. praetermissa.
Leucorchis albida.
Gymnadenia conopsea.
Platanthera bifolia.
Polygonatum multiflorum.
Tofieldia palustris.
Juncus maeer.
J. pygmaeus.
J. capitatus.
Potamogeton lucens.
P. crispus.
P. perfoliatus.
P. filiformis.
Ruppia maritima.
Carex pauciflora.
C. vulpina.
C. rigida.
C. remota.
C. sylvatica.
C. helodes.
C. distans.
C. vesicaria.
Phalaris arundinacea.
Calamagrostis epigeios.
Deschampsia setacea.
Avena pubescens.
A. pratensis.
Bromus sterilis.
B. commutatus.
Agropyron caninum.
A. repens.
Cryptogramma crispa.
Asplenium septentrionale.
Cystopteris fragilis.
Polystichum Lonchitis.
Lastrea aemula.
Botrychium Lunaria.
Equisetum maximum.
Lycopodium inundatum.
L. clavatum.
L. alpinum.

It is no doubt tempting to assume that the preponderance of species restricted to Raasay depends upon its greater area, but this is quite an

unsafe procedure; the matter is much more complicated than that. It is true that mere area, as well as the more varied geological conditions available, does play its part. In addition, the presence of Raasay House and its woods and the greater extent of cultivation are not without their influence. Still, these facts do not explain why many of the noteworthy of the Raasay specialities are those occupying habitats along the cliffs of the eastern coasts. Clearly, much more study will be required to elucidate the situation.

However, one suggestion likely to throw light on the problem depends upon the height and precipitous nature of the eastern coast line. It seems quite possible that the ledges on these cliffs have behaved as "nunataks," so that the plants now found upon them have never been subjected to the working of the wholesale destructive agencies, pictured as destroying the vegetation of the British Islands, both here and elsewhere, during the Glacial Period. This view is far from fantastic when considered in connection with Fernald's recent illuminating studies in glacial survivals on the cliffs of Lake Superior, of Gaspé Peninsula, and of Newfoundland, and with the facts presented by Thomson in dealing with the vegetation of the cliffs of Otago Peninsula in New Zealand.

If further details are needed concerning the Flora of these interesting islands, they may be obtained from the *Flora of Raasay*, published from this Department, but I should like to emphasise the fact that our work is far from completed. A further expedition to the island group has been planned for the summer of 1937, when it is hoped to devote much more time and energy to the problem of the eastern cliffs, to the general ecology, and to the Cryptogams.

THREE WEEKS BOTANISING IN THE OUTER HEBRIDES.

M. S. Campbell, F.L.S.

During the previous century a number of botanists made collections in most of the principal islands of the Outer Hebrides. Of the resulting publications those of Macgillivray, Balfour and Babington, Barrington, Somerville and Shoolbred are outstanding. Arthur Bennett, in his "Contributions to a Flora of the Outer Hebrides," gathered together most of the published records and also added a large number based on the collections made for him by W. S. Duncan, a resident in one of the islands. Of recent years the attention of botanists has apparently been chiefly directed to the St Kilda group and the island of Barra.

In 1936 I spent the first three weeks of June in the Outer Hebrides, visiting South Uist, Benbecula—including Wiay, a small island off the east coast—N. Uist and S. Harris. In addition to a general collection of vascular plants special attention was paid to the "Marsh" Orchids —a feature of many places on the western sides of North and South Uist and Benbecula—selected series of which were sent fresh to Mr A. J. Wilmott, who has contributed the notes on this group.

In view of the apparent scarcity of recent information on the flora of these islands, I give a detailed list of my general collection. As far as it has been possible to ascertain, it includes a few new records. A separate list is added of those species not included in the *Comital Flora* for v.-c. 110, but which in reality are not new records.

All specimens have been deposited in Herb. Mus. Brit.

I am very grateful to Mr Wilmott for all the help he has given me in going through the collection and identifying a large number of specimens. In addition, I wish to thank Messrs A. H. G. Alston, G. O. Allen, J. E. Dandy, H. W. Pugsley, A. L. Still and Dr G. Taylor, and also my brother, Dr James W. Campbell, who arranged the visit, and later collected some supplementary material. Initials in parentheses indicate those responsible for determinations and notes preceding them.

Abbreviations:—A.H.G.A.=A. H. G. Alston. *A.S.N.H.=The Annals of Scottish Natural History.* BEN.=Benbecula. H.W.P.=H. W. Pugsley. J.W.C.=James W. Campbell. M.S.C.=M. S. Campbell. N.U.=North Uist. P.M.H.=P. M. Hall. S.H.=South Harris. S.U.=South Uist. W.=A. J. Wilmott. *=New record for v.-c. 110. †=Not native in this locality.

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2/3. THALICTRUM MINUS L., sensu stricto. (T. ARENARIUM Butcher). S.U.: Near Daliburgh, sand-dunes. BEN.: Borve. N.U.: Ard an Rùnair. In each of these localities there is also a less glandular *Thalictrum*, but in the absence of fruits I cannot identify it. (W.)

2/5. T. ALPINUM L. S.H.: Roneval.

6/2. RANUNCULUS REPENS L. S.U.: Lochboisdale, roadside ditch.

6/3. R. ACRIS L. S.U.: Near Daliburgh, on the machair and dunes; Lochboisdale; Pollachar; Kilpheder. BEN.: Borve; Wiay. N.U.: Between Goular and Ard an Rùnair, dunes; Newton. Very variable and interesting, requiring further study. (W.)

6/5. R. BULBOSUS L. S.U.: Near Daliburgh, dunes.

6/7. R. FLAMMULA L. S.U.: Near Askernish. BEN.: Rueval. N.U.: Loch Scolpaig.

6/23. R. PAUCISTAMINEUS Tausch. S.U.: Daliburgh, a land form, probably of this species. (W.)

6/32. R. HEDERACEUS L. S.U.: Pollachar.

6/33. R. FICARIA L. N.U.: Marsh near Goulaby burn.

7/1. CALTHA PALUSTRIS L. S.U.: Near Daliburgh. Also in another place at Daliburgh occurred a form with remarkably crenate-dentate differently shaped leaves. Both have narrowish sepals (as var. *Guerangerii*). (W.)

20/1c. NYMPHAEA OCCIDENTALIS (Ostenf.) Moss. S.U.: Near Loch à Chafain, small pool at roadside. (W.)

21/3. PAPAVER DUBIUM L., em. Lamotte. N.U.: Newton Ferry, field near. (W.)

35/1. NASTURTIUM OFFICINALE R. Br. S.U.: Daliburgh. BEN.: Nunton.

37/1. ARABIS HIRSUTA (L.) Scop. N.U.: Newton Ferry, on the coast; Newton, sand-dunes. This is what has been called *A. ciliata*, var. *hispida*, and *A. Retziana*, var. *hispida*, which I cannot distinguish. I call this merely forma in arenosis maritimis. (W.)

39/1. CARDAMINE PRATENSIS L. BEN.: Wiay.

39/4. C. FLEXUOSA With. Ben.: Rueval. (W.)

39/5. C. HIRSUTA L. BEN.: Wiay. (W.)

45/6. COCHLEARIA GROENLANDICA auct. angl. (vix L.). S.U.: Pollachar. BEN.: Creagorry, creek in front of hotel; Wiay. N.U.: Ahmore Strand. Specimens from the following differ somewhat and show signs of sterility: they may be of hybrid origin (? with *C. officinalis*). (W.) N.U.: Lochmaddy, near the Spanish suspension bridge. S.H.: Borosdale (leaves with deep purplish veins).

54/4d. BRASSICA RAPA L., var. BRIGGSII Wats. S.U.: Near Daliburgh. N.U.: Newton, cultivated field.

54/14. SINAPIS ARVENSIS L. BEN.: Borve.

59/1. CAPSELLA BURSA-PASTORIS (L.) Medik. S.U.: Pollachar. BEN.: Borve. N.U.: Newton, cultivated field.

77/1. CAKILE MARITIMA Scop. S.U.: Near Daliburgh, seashore.

80/1. RAPHANUS RAPHANISTRUM L. N.U.: Newton, cultivated field. Flowers uniformly pure bright golden yellow, without purple veins.

88/4. VIOLA RIVINIANA Rchb. S.U.: Loch Stulaval (coll. J.W.C.). BEN.: Wiay. S.H.: Roneval.

88/11. V. PALUSTRIS L. BEN.: Wiay.

88/34. V. CURTISII Forster. S.U.: Near Daliburgh. BEN.: Borve. N.U.: Newton, fields. (W.)

89/1. POLYGALA SERPYLLIFOLIA Hose. BEN.: Rueval. (W.)

89/2. P. VULGARIS L. S.U.: Near Daliburgh, sand-dunes. N.U.: Sollas, a patch of c. 20 plants of a deep purplish-magenta—the colour of *Erica cinerea*. S.H.: Druim Skeilibreck.

89/4. P. OXYPTERA Rchb. S.U.: Daliburgh ?, too young. N.U.: Newton Ferry. S.H.: Rodel. (W.)

96/1. SILENE MARITIMA With. S.H.: Rodel, rocks by the harbour.

98/1. LYCHNIS FLOS-CUCULI L. S.U.: Pollachar. BEN.: Wiay.

98/3. MELANDRYUM ALBUM (Mill.) Garcke. N.U.: Newton.

100/5. CERASTIUM VULGATUM L. (C. TRIVIALE Link). S.U.: Daliburgh. BEN.: Wiay.

100/6. C. VISCOSUM L. S.H.: Rodel.

100/9. C. TETRANDRUM Curt. S.U.: Lochboisdale; near Daliburgh, on the machair. (W.)

101/3. STELLARIA MEDIA (L.) Vill. S.U.: Near Daliburgh.

101/8. S. ULIGINOSA Murr. BEN.: Wiay.

102/5. ARENARIA SERPYLLIFOLIA L., em. Guss. N.U.: Newton Ferry.

102/7. HALIANTHUS PEPLOIDES (L.) Fr. (ARENARIA PEPLOIDES L.). S.U.: Shore near Daliburgh. This plant is also abundant on parts of the machair which have been left to go fallow.

103/2. SAGINA SUBULATA (Sw.) Presl. N.U.: Crogary More, summit. (W.)

103/11. S. PROCUMBENS L. BEN.: Rueval.

104/1. SPERGULA ARVENSIS L., sensu lato. N.U.: Newton, cultivated field. Too immature to determine: *S. sativa* Boenn. is recorded in *Comital Flora*. (W.)

105/. Spergularia. N.U.: Near Newton Ferry, salt marsh. Very small but looks like *S. marginata*. (W.)—Too immature to determine the species. S.U.: Lochboisdale, one plant near the pier. N.U.: Ahmore Strand.

109/1. Montia fontana L., var. lamprosperma (Cham.) Fenzl. BEN.: Wiay. N.U.: Marsh near Goulaby burn. (W.)

112/9. Hypericum pulchrum L. S.H.: Druim Skeilibreck.

125/3. Linum catharticum L. N.U.: Newton Ferry. S.H.: Druim Skeilibreck.

127/10. Geranium molle L. S.U.: Near Daliburgh.

128/3. Erodium cicutarium (L.) L'Hérit. S.U.: Near Daliburgh, on the machair. BEN.: Borve.

132/1. Oxalis Acetosella L. BEN.: Wiay.

*153/7. Medicago lupulina L. N.U.: Newton. (W.)

155/2. Trifolium pratense L. S.U.: Lochboisdale. S.H.: Rodel. "Var. *maritimum* Marss.": very hairy and fine-headed, but not agreeing completely with Marsson's description: nor, however, does Shoolbred's specimen in Herb. Mus. Brit. (W.) N.U.: Field near Goulaby burn; near Goular, dunes.

155/16. T. repens L. S.U.: Lochboisdale. N.U.: Newton.

156/1. Anthyllis Vulneraria L. N.U.: Newton Ferry.

160/5. Lotus corniculatus L., em. Rchb. BEN.: Peter's Port. N.U.: Newton.

176/3. Vicia Cracca L. BEN.: Borve.

176/8. V. sepium L. N.U.: Newton. S.H.: Borosdale.

*176/13. V. angustifolia (L.) Reichard. N.U.: Newton. (W.)

178/6. Lathyrus pratensis L. N.U.: Newton.

178/25. L. montanus Bernh. S.H.: Druim Skeilibreck.

184/11. Spiraea Ulmaria L. N.U.: Near Newton Ferry.

185/1. Rubus Idaeus L. S.U.: Loch Stulaval (coll. J.W.C.).

185/. R. fruticosus L. Specimens yet undetermined critically were collected in: BEN.: Rueval, Loch Bà Una, growing with *Salix aurita*; N.U.: In the Alder swamp near Goulaby burn.

185/154. R. saxatilis L. BEN.: Wiay.

189/3. Potentilla Anserina L. S.U.: Pollachar.

189/9. P. erecta (L.) Hampe. S.H.: Druim Skeilibreck.

189/25. Comarum palustre L. BEN.: Nunton. N.U.: Loch Scolpaig.

190/20 ["19" bis!]. Alchemilla arvensis (L.) Scop. N.U.: Newton Ferry.

*194/20. Rosa Sherardi (Davies), var. omissa (Déségl.) W.-Dod. BEN.: Rueval; Wiay. Leaves only, but quite characteristic. (W.)

195/5. Sorbus aucuparia L. BEN.: Wiay. Loch na Béiste. Small trees on the islands and at the side of the loch.

*199/20. Saxifraga tridactylites L. S.U.: Near Daliburgh, sand-dunes.

199/23. S. stellaris L. S.H.: Roneval, near the top of the Coire.

*†199/24. S. umbrosa L. N.U.: Near Goulaby burn, in a ditch.

211/6. Sedum acre L. S.U.: Daliburgh, sand-dunes.

211/11. S. anglicum Huds. S.U.: Lochboisdale. BEN.: Rueval. N.U.: Near Lochmaddy.

211/22. S. Rhodiola DC. S.H.: Roneval, in the Coire.

213/1. Drosera anglica Huds. S.U.: Near Askernish.

213/3. D. rotundifolia L. S.U.: Near Askernish.

214/1. Hippuris vulgaris L. S.U.: Near Daliburgh, abundant in wet meadows.

216/2. Myriophyllum alterniflorum DC. S.U.: Near Askernish. (W.)

217/1. Callitriche stagnalis Scop., sec. Kütz. S.U.: Near Daliburgh; Pollachar. BEN.: Nunton. N.U.: Marsh near Goulaby burn. (W.)

217/5. C. intermedia Hoffm. (C. hamulata Kütz.). BEN.: Wiay. (W.)

220/4. Epilobium parviflorum Schreb. N.U.: Newton Ferry.

220/10. E. montanum L. BEN.: Wiay. S.H.: Borosdale. (W.)

220/14. E. palustre L. S.U.: Near Askernish. BEN.: Wiay. N.U.: Near Goulaby burn. (W.)

237/1. Hydrocotyle vulgaris L. BEN.: Wiay.

247/5. Apium inundatum (L.) Rchb. fil. S.U.: Near Askernish.

*256/1. Conopodium majus (Gouan) Loret & Barr. N.U.: Lochmaddy, field by Sponish suspension bridge.

257/1. Myrrhis Odorata (L.) Scop. N.U.: Newton, outside the garden wall. Also specimen in flower, November 27th (coll. J.W.C.).

265/3. Oenanthe crocata L. S.U.: Pollachar. BEN.: Wiay, side of Loch na Béiste.

271/1. Haloscias scoticum (L.) Fr. S.U.: Pollachar, one plant seen.

274/1. Angelica sylvestris L. BEN.: Rueval; Wiay.

277/2. Heracleum Sphondylium L. BEN.: Borve. N.U.: Alder swamp near Goulaby burn; a dwarf form abundant on cliff top near Goular.

282/1. Daucus Carota L. N.U.: Near Loch Scolpaig, cultivated field.

291/2. Lonicera Periclymenum L. BEN.: Wiay. N.U.: Crogary More.

296/4. Galium saxatile L. BEN.: Rueval; Wiay. S.H.: Druim Skeilibreck.

296/7. G. palustre L. BEN.: Wiay. N.U.: Marsh near Goulaby burn; Goular. (W.)

296/9. G. verum L. BEN.: Borve. N.U.: Newton. S.H.: Borosdale.

296/11. G. Aparine L. S.U.: Pollachar.

300/1. Sherardia arvensis L. N.U.: Newton; near Loch Scolpaig, cultivated field.

304/1. Valerianella Locusta (L., em.) Betcke. (V. olitoria Poll.). N.U.: Newton, fields; Newton Ferry. (W.)

312/1. Solidago Virgaurea L. BEN.: Rueval; Wiay. N.U.: Crogary More, rocks near summit. S.H.: Roneval, in the Coire.

314/1. Bellis perennis L. S.H.: Borosdale.

318/19. Aster Tripolium L. S.U.: Lochboisdale.

326/1. Antennaria dioica (L.) Gaert. BEN.: Wiay. N.U.: Sollas. S.H.: Roneval, on ledges near top of Coire.

326/b. A. hyperborea D. Don. S.H.: Roneval, low down, among rocks. This has leaves densely hairy on both sides. The plants are small, and the leaves are not exactly like those of the Skye plant, but nor are those of the Ross plant recorded by Prof. M. L. Fernald. The group requires further critical study. (W.)

370/1. Chrysanthemum segetum L. S.U.: Near Daliburgh. BEN.: Borve.

370/4. C. Leucanthemum L. S.U.: Lochboisdale.

371/1. Matricaria inodora L. S.U.: Near Daliburgh, seashore. (W.)

378/3. Artemisia vulgaris L. ? BEN.: Borve. A peculiar form with leaves grey-silky on upper surface, somewhat recalling *A. Absinthium*. No flowers. (W.)

380/1. Petasites hybridus (L.) G.M.S., em. Fritsch. N.U.: Balelone, roadside.

383/3. Senecio aquaticus Hill. BEN.: Borve. (W.)

383/5. S. Jacobaea L. BEN.: Borve.

383/10. S. vulgaris L. S.U.: Daliburgh.

396/8. Cirsium arvense (L.) Scop. S.U.: Lochboisdale.

396/9. C. palustre (L.) Scop. BEN.: Rueval, bank of Loch Bà Una. S.H.: Borosdale.

401/1. Saussurea alpina (L.) DC. S.H.: Roneval, among rocks near the summit.

405/8. Centaurea nigra L., sensu stricto. (C. obscura Jord.). N.U.: Marsh near Goulaby burn. (W.)

419/1. Hieracium Pilosella L. N.U.: Sollas.

419/17. H. caledonicum F. J. Hanb. BEN.: Rueval, rock ledges near the summit. S.H.: Borosdale; Druim Skeilibreck. (H.W.P.)

419/22. H. "scoticum F. J. Hanb." N.U.: Crogary More, rocks near summit. The only *Hieracium* I saw in this locality (cf. Bennett, 1910, 167).

421/2. Hypochaeris radicata L. S.H.: Druim Skeilibreck; Rodel, on rocks at roadside.

423/. Taraxacum officinale Vill. (Several species! W.). S.U.: Daliburgh; Pollachar. N.U.: Beinn Mhòr; Crogary More. S.H.: Roneval.

431/1. Lobelia Dortmanna L. S.U.: Loch à Chafain.

438/2. Vaccinium Myrtillus L. BEN.: Wiay.

446/1. Erica cinerea L. BEN.: Rueval.

458/2. Armeria maritima (Mill.) Willd. BEN.: Peter's Port. Var. *Linkii* Gren. & Godr., *Statice pubescens* (Sm.) Druce of *Comital Flora*. Calyx with hairs confined to ribs. (W.)

460/2. Primula vulgaris Huds. BEN.: Rueval. S.H.: Rodel.

466/1. Glaux maritima L. BEN.: Peter's Port.

467/1. Anagallis tenella Murr. S.U.: Near Askernish. BEN.: Rueval.

469/1. Samolus Valerandi L. N.U.: Loch near Loch Scolpaig.

478/1. Erythraea Centaurium (L.) Pers. N.U.: Newton. (W.)

481/1. Menyanthes trifoliata L. N.U.: Loch Scolpaig.

501/1. Lycopsis arvensis L. BEN.: Borve.

506/3. Myosotis repens [Don ined.] Rchb. N.U.: Newton, marsh below garden. S.H.: Rodel. (W.)

506/8. M. arvensis Hill, em., Hoffm. BEN.: Borve. (W.)

506/10. M. versicolor Sm. S.U.: Near Daliburgh. BEN.: Creagorry.

535/4. Scrophularia nodosa L. N.U.: Newton, below the garden.

541/1. Digitalis purpurea L. BEN.: Rueval, bank of Loch Bà Una.

543/3. Veronica officinalis L. N.U.: Crogary More, rocks near summit.

543/4. V. Chamaedrys L. N.U.: Lochmaddy.

543/6. V. scutellata L. S.U.: Near Askernish.

543/9. V. aquatica Bernh. S.U.; Near Daliburgh. BEN.: Nunton. (W.)

543/11. V. serpyllifolia L. S.U.: Pollachar. N.U.: Newton, field outside the garden.

543/15. V. arvensis L. S.U.: Daliburgh. BEN.: Borve.

545/3. Euphrasia brevipila B. & G. S.H.: Glen Rodel. (H.W.P.) Specimens too young for Mr Pugsley to determine may also be forms of *E. brevipila*: BEN.: Borve. N.U.: Newton Ferry; field near Goulaby burn. S.H.: Rodel. (W.)

545/16. E. scotica Wetts. S.H.: Druim Skeilibreck (det. H.W.P. as "cf.").

546/5. Odontites vulgaris Moench, em. S.H.: Rodel (? var. *litoralis* Fr., but very young. W.).

547/1. Pedicularis palustris L. S.U.: Near Daliburgh.

547/2. P. sylvatica L. BEN.: Wiay; Peter's Port. S.H.: Rodel.

548/3. Rhinanthus minor Ehrh. BEN.: Creagorry, meadows by roadside near post office. N.U.: Field near Goulaby burn; Newton Ferry (? a different form from the others). S.H.: Rodel.—"Var. *pubescens* Wallr." ?, Bennett (1895, 244). BEN.: Wiay, with peculiar woolly hairs on lower stem and leaves.

553/2. Pinguicula vulgaris L. S.U.: Near Askernish. BEN.: Wiay. N.U.: Newton Ferry; marsh by Goulaby burn.

558/7. Mentha aquatica L. N.U.: Marsh near Goulaby burn. (A. L. Still.)

561/4. Thymus Serpyllum L. Too young for critical determination. (W.) BEN.: Rueval. N.U.: Crogary More, rocks near summit. S.H.: Rodel.

572/2. Scutellaria minor Huds. BEN.: Rueval, under bushes by Loch Bà Una. (W.)

573/1. Prunella vulgaris L., em. Moench. S.U.: Near Askernish.

578/2. Galeopsis Tetrahit L., em. Mill. S.U.: Lochboisdale (coll. J.W.C.). BEN.: Creagorry.

581/3. Lamium purpureum L. BEN.: Borve.

587/1. Ajuga reptans L. S.U.: Loch Stulaval (coll. J.W.C.).

588/3. Plantago Coronopus L. BEN.: Borve.

588/5. P. maritima L. S.U.: Pollachar. N.U.: Ahmore Strand.

588/8. P. lanceolata L. S.U.: Near Daliburgh, sand-dunes; Pollachar. N.U.: Dunes between Goular and Ard an Rùnair. S.H.: Borosdale.

588/10. P. major L. S.U.: Lochboisdale.

589/1. Littorella uniflora (L.) Asch. S.U.: Near Askernish. BEN.: Rueval; Wiay.

600/8. Chenopodium album L., em. Koch. S.U.: Pollachar. BEN.: Borve. (W.)

606/7. Atriplex glabriuscula Edmondst. S.U.: Coast near Daliburgh. (W.)

606/8. A. sabulosa Rouy. S.U.: Coast near Daliburgh. (W.)

611/. Salicornia. Too young to determine. S.U.: Lochboisdale, creek opposite the post office. BEN.: Creagorry, opposite the hotel. N.U.: Ahmore Strand; Newton Ferry, salt marsh near.

615/2. Polygonum Convolvulus L. BEN.: Nunton.

615/5. P. amphibium L. S.H.: Rodel.

615/5b. P. amphibium, var. terrestre Leers. BEN.: Borve.

615/15. P. Raii Bab. S.U.: Seashore near Daliburgh; ? Pollachar, by the inn; a curious form with large broad leaves, too young for fruit. (W.)

618/3. Rumex crispus L. S.U.: Pollachar. BEN.: Peter's Port. (W.)

618/14. R. Acetosa L. BEN.: Wiay.

618/16. R. Acetosella L. BEN.: Rueval. S.H.: Rodel.

628/7. Euphorbia Helioscopia L. BEN.: Borve.

633/1. Ulmus scabra Mill. N.U.: Newton, west of the Lodge. (W.)

637/2. Urtica urens L. S.U.: Carnan, by the inn.

641/1. Myrica Gale L. BEN.: Rueval.

642/2. Betula glutinosa Fr. (W.) BEN.: Wiay, one "bush" (without fruit).

643/1. Alnus glutinosa Gaert. N.U.: Marsh near Goulaby burn. A number of small trees, probably planted.

645/1. Corylus Avellana L. BEN.: Rueval.

650/1. Salix pentandra L. N.U.: Newton, marsh below garden.

650/9. S. aurita L. BEN.: Rueval. N.U.: Ahmore Strand, roadside bank near.

650/11. S. " ARENARIA-REPENS " Flod. S.U.: Near Askernish. N.U.: Crogary More. A specimen from N.U.: Newton may be *S. repens* L. (W.)

651/2. POPULUS TREMULA L. BEN.: Wiay.

652/1. EMPETRUM NIGRUM L. BEN.: Wiay.

663/2. LISTERA CORDATA (L.) R. Br. BEN.: Wiay.

669/. ORCHIS L. "The dried specimens have been seen by Mr P. M. Hall, who, like myself, cannot be completely certain of distinguishing *O. latifolia* (*O.* " *incarnata* ") from *O. purpurella* except in living specimens, for some of these plants thought by him to be *O. purpurella* were obviously (from the bright ruby colour of their flowers, the lip markings, and the foliage) *O. latifolia* when examined alive by Miss Campbell and myself. I have, therefore, merely indicated (by "P.M.H.") those cases where Mr Hall's determinations of the dried specimens confirm my own of the living ones, and add that it is evident that all old records will require confirmation from living specimens seen by some modern expert.

669/7. O. LATIFOLIA L., sec. Pugsley. (O. INCARNATA auct. non L.). With the exception of a few paler flowered (salmonish-ruby) specimens, all these are of the bright deep ruby-flowered form, small specimens of which growing in dune-marshes have been named var. *dunensis* by Druce and var. *coccinea* by Pugsley. S.U.: Near Daliburgh, dune marsh (P.M.H.); Pollachar; Kilpheder. BEN.: Nunton. N.U.: Between Lingay Strand and Newton, dune marsh; Loch Scolpaig. Two specimens were also seen at Clachan (near Newton) among a vast number of mixed (? hybrid) forms of all sorts, but this gathering was, unfortunately, lost in the post.

669/8b and 9. O. PURPURELLA Steph. The Scottish forms and/or allies of this species are not yet fully understood. Between the taller more foliaceous " var. *pulchella* " (*O. praetermissa*, var. *pulchella* Druce) with unspotted leaves and broad flat lip resembling that of *O. praetermissa* in shape and *O. purpurella* in marking, and *O. purpurella* Stephenson, usually smaller with narrower leaves normally spotted (the spots are typically few and usually towards the apex and leaf tips but sometimes more numerous and heavy) and diamond-shaped lip sometimes with long protruding middle lobe, there are to be found many plants with intermediate characters which may be hybrids or which may indicate that no line can be drawn between the two forms, and that *O. purpurella* is merely more variable than Stephenson supposed. But on the northern coast of Scotland remarkably fine plants with brilliantly purple, richly marked flowers and broad, often heavily marked, leaves may be found which I have never yet seen in central and southern Scotland, where the *purpurella-pulchella* series is often abundant. One specimen approaches this " north coast " form. At the other extreme are some small forms with narrow leaves, lax spikes, and elongated midlobe to the labellum which show some superficial resemblance to *O. Francis-Drucei* but lack the peculiar form, colouring, and marking of the labellum. All these forms are here recorded under *O. purpurella*,

with some indication of their characters. (1) Leaves unspotted, some of which may be var. *pulchella*. N.U.: Lochmaddy; bog by the Alder swamp near Goulaby burn (P.M.H.) (both with broad leaves, and may be var. *pulchella*)—near Loch Scolpaig (leaves narrower; some like north coast form (P.M.H.)); between Lingay Strand and Newton (coll. J.W.C.; those collected by M.S.C. with broader larger leaves may be var. *pulchella*). (2) Leaves more or less spotted or blotched. S.U.: Pollachar. BEN.: Nunton (P.M.H.) (often with very few spots as typical, and one quite without spots). N.U.: Near the Goulaby burn, damp hollow near the dunes (P.M.H.); near Loch Scolpaig (P.M.H.) ("typical *purpurella*") (leaves narrow in two small specimens and "marked as in Godfery's *eborensis*" (P.M.H.), but broad in the third specimen).

669/9(2). O. MAJALIS Reichb., sub-sp. OCCIDENTALIS (Pugsley) Pugsley. N.U.: A moderately uniform series collected between Lingay Strand and Newton, in damp hollows among the dunes, shows the same habit, extremely variable leaf-marking, and flower characters (except that Mr Pugsley thinks the lip is perhaps slightly narrower) of *occidentalis*. I received them fresh within a few days of receiving fresh *occidentalis* from Ireland, and considered them identical, except that the Hebridean plants (from dunes dry in summer) are smaller; Mr P. M. Hall agrees with this determination, and Mr Pugsley sees nothing against it. One specimen collected at Newton Ferry had unspotted leaves, but similar plants were also sent me from Ireland.

669/10. O. ELODES Grisebach; O. MACULATA L., sec. auct. nonnull. S.U.: Loch Stulaval (coll. J.W.C.). BEN.: Rueval; Wiay. N.U.: Sollas.

669/. O. ELODES × PURPURELLA; × O. FORMOSA Stephenson. N.U.: Bog by the Alder swamp near the Goulaby burn (P.M.H.); near Loch Scolpaig (P.M.H.)." (W.)

674/4. COELOGLOSSUM VIRIDE (L.) Hartm. N.U.: Near Newton Ferry, sea cliffs.

676/1. IRIS PSEUDACORUS L. N.U.: Marsh near Goulaby burn. (Also abundant in S.U.)

702/6. ALLIUM URSINUM L. N.U.: Newton, under the wall outside the garden.

706/3. SCILLA NON-SCRIPTA L. (ENDYMION NON-SCRIPTUS (L.) Garcke. BEN.: Rueval; Wiay.

714/1. NARTHECIUM OSSIFRAGUM (L.) Huds. BEN.: Wiay.

718/3. JUNCUS CONGLOMERATUS L., em. Koch. N.U.: Marsh near Goulaby burn.

718/6. J. BALTICUS Willd. S.U.: Near Daliburgh. N.U.: Newton; near mouth of Goulaby burn.

718/12. J. BULBOSUS L. S.U.: Pollachar. N.U.: Loch an Duin. S.H.: Borosdale.

718/13. J. SQUARROSUS L. BEN.: Rueval.

718/15. J. GERARDI Lois. S.U.: Pollachar. (W.)

*718/16. J. TENUIS Willd. (J. MACER S. F. Gray). ? Too young for certainty and in habitat of *J. Gerardi*, but with long bracts and acute

ORCHIS MAJALIS Reichb., sub-sp. OCCIDENTALIS Pugsl.
N. Uist: between Lingay Strand and Newton: M.S.C., 10.vi.1936. ×3/2.

tepals. (W.) BEN.: Creagorry, creek in front of hotel.? S.H.: Borosdale.

718/17. J. BUFONIUS L. N.U.: Newton.

719/1. LUZULA SYLVATICA (Huds.) Gaud. S.U.: Loch Stulaval (coll. J.W.C.). S.H.: Borosdale.

719/2. L. PILOSA (L.) Willd. BEN.: Wiay.

719/4. L. MULTIFLORA (Retz.) Lej. BEN.: Wiay. (W.)

719/6. L. CAMPESTRIS (L.) DC., em. Lej. BEN.: Creagorry; Rueval. (W.)

*723/1. ARUM MACULATUM L. N.U.: Newton, under wall, outside garden.

735/1. TRIGLOCHIN MARITIMUM L. S.U.: Near Daliburgh. N.U.: Near Clachan sands, two or three plants with spikes greenish-ochre.

735/2. T. PALUSTRE L. S.U.: Near Daliburgh. BEN.: Nunton.

737/1. POTAMOGETON NATANS L. S.U.: Near Askernish. (W.)

737/2. P. POLYGONIFOLIUS Pourr. S.U.: Near Askernish. (J. E. Dandy and G. Taylor.)

738/. RUPPIA. N.U.: Loch Eport, without fruits.

740/1. ZOSTERA MARINA L. S.U.: Pollachar. N.U.: Lingay Strand. (W.)

745/1. ELEOCHARIS PALUSTRIS (L.) R. & S. S.U.: Near Daliburgh, sand-dunes; near Askernish. N.U.: Marsh near Goulaby burn. (W.)

745/2. E. UNIGLUMIS (Link) Schultes. N.U.: Ahmore Strand. (W.)

745/3. E. MULTICAULIS Sm. BEN.: Rueval. (W.)

746/2. SCIRPUS MARITIMUS L. BEN.: Borve, very immature.

746/4. S. TABERNAEMONTANI Gm. S.U.: Daliburgh. N.U.: Goular (near Balranald).

746/7. S. CAESPITOSUS L. BEN.: Wiay.

746/8. S. PAUCIFLORUS Lightf. S.U.: Near Askernish. BEN.: Rueval, Loch Bà Una. N.U.: Near Newton Ferry; Ahmore Strand; near Balelone; Loch Scolpaig.

746/11. S. SETACEUS L. S.H.: Druim Skeilibreck.

746/13. S. FLUITANS L. S.U.: Near Askernish.

746/15. BLYSMUS RUFUS (Huds.) Link. S.U.: Pollachar. N.U.: Ahmore Strand; near mouth of Goulaby burn.

747/2. ERIOPHORUM ANGUSTIFOLIUM Roth. BEN.: Rueval; Peter's Port.

747/4. E. VAGINATUM L. BEN.: Rueval; Wiay.

749/1. SCHOENUS NIGRICANS L. BEN.: Rueval.

753/7. CAREX ROSTRATA Huds. S.U.: Loch à Chafain. N.U.: Loch Scolpaig. (W.)

753/15. C. BINERVIS Sm. BEN.: Rueval. N.U.: Beinn Mhor.

753/17. C. DISTANS L. S.U.: Pollachar.

753/19. C. HORNSCHUCHIANA Hoppe. S.U.: Near Askernish. N.U.: Loch Scolpaig. (W.)

753/20. C. FLAVA L. BEN.: Rueval (cf. var. *minor* Towns.). (W.)

753/22. C. OEDERI Retz. BEN.: Rueval, by Loch Bà Una. (W.)

753/23. C. EXTENSA Good. N.U.; Ahmore Strand.

753/32. C. PILULIFERA L. BEN.: Rueval.

753/33. C. FLACCA Schreb. S.U.: Daliburgh. N.U.: Near Newton Ferry. (W.)

753/36. C. PANICEA L. BEN.: Rueval. (W.)

753/49. C. GOODENOWII Gay. S.U.: Daliburgh; Pollachar; near Askernish. BEN.: Rueval; Wiay. N.U.: Marsh near Goulaby burn; near mouth of Goulaby burn. S.H.: Rodel. (W.)

753/56. C. STELLULATA Good. (C. ECHINATA Murr.). BEN.: Rueval.

753/63. C. PANICULATA L., em. Schk. BEN.: Nunton.

753/74. C. PULICARIS L. BEN.: Rueval.

753/75. C. DIOICA L. BEN.: Rueval. N.U.: Near Newton Ferry.

765/11b. PHALARIS ARUNDINACEA L., var. PICTA L. N.U.: Marsh near Goulaby burn.

766/1. ANTHOXANTHUM ODORATUM L. BEN.: Rueval.

*767/1. HIEROCHLOE ODORATA (L.) Wahl. BEN.: Nunton. (W.)

770/5. ALOPECURUS GENICULATUS L., em. Sm. S.U.: Pollachar.

787/1. AMMOPHILA ARENARIA (L.) Link. N.U.: Newton.

789/2. AIRA PRAECOX L. BEN.: Rueval.

791/4. DESCHAMPSIA FLEXUOSA (L.) Trin. S.H.: Rodel.

792/2. HOLCUS LANATUS L. S.U.: Lochboisdale.

794/2. AVENA PUBESCENS Huds. N.U.: Newton Ferry. S.H.: Druim Skeilibreck. (W.)

802/1. PHRAGMITES COMMUNIS Trin. BEN.: Nunton.

808/2. CYNOSURUS CRISTATUS L. S.U.: Lochboisdale.

809/3. KOELERIA GRACILIS Pers., sub-sp. BRITANNICA (Domin). N.U.: Near Newton Ferry on sea cliffs. S.H.: Rodel. (W.)

819/1. DACTYLIS GLOMERATA L. S.U.: Lochboisdale.

824/2. POA PRATENSIS L. S.U.: Daliburgh; Pollachar; near Askernish; Lochboisdale. N.U.: Newton. S.H.: Rodel. Most specimens seem to be (/3) var. SUBCAERULEA Sm. A peculiar specimen from BEN.: Nunton, appears to be a form of *P. pratensis* in spite of the absence of arachnoid hairs at the base of the florets. (W.)

824/6. P. TRIVIALIS L. N.U.: Alder swamp near Goulaby burn. (W.)

825/2. GLYCERIA FLUITANS (L.) R. Br. N.U.: Lochmaddy, roadside ditch near Police Station. S.H.: Rodel. (W.)

826/4. FESTUCA ELATIOR L. N.U.: Loch Scolpaig. (W.)

826/7. F. RUBRA L. BEN.: Rueval. N.U.: Newton; Crogary More. (W.)

826/7f. F. RUBRA L., ssp. ARENARIA (Ost.). N.U.: Near Goular, dunes. (W.)

826/10b. F. VIVIPARA (L.) Sm. S.H.: Rodel; Roneval, in a spout in the coire.

829/1. LOLIUM PERENNE L. S.U.: Lochboisdale.

834/1. NARDUS STRICTA L. BEN.: Rueval.

839/1. JUNIPERUS COMMUNIS L. S.U.: Loch Stulaval (coll. J.W.C.). BEN.: Wiay. (W.)

839/2. J. SIBIRICA Burgsd. S.H.: Roneval, among rocks E. of Rodel.

844/5. EQUISETUM LIMOSUM L., em. Koch. N.U.: Marsh near Goulaby burn. (A.H.G.A.)

844/6. E. PALUSTRE L. S.U.: Daliburgh. BEN.: Nunton. N.U.: Marsh near Goulaby burn. (A.H.G.A.)

851/1. ASPLENIUM MARINUM L. BEN.: Wiay. S.H.: Borosdale.

851/5. A. ADIANTUM-NIGRUM L., em. Huds. BEN.: Rueval.

851/7. A. RUTA-MURARIA L. S.H.: Rodel.

853/1. ATHYRIUM FILIX-FOEMINA (L.) Roth. BEN.: Wiay.

856/1. DRYOPTERIS FILIX-MAS (L.) Schott. N.U.: Marsh near Goulaby burn. (A.H.G.A.)

856/4. D. DILATATA (Hoffm.) A. Gray. BEN.: Wiay. J.W.C. found large quantities of this in Heron nests. (A.H.G.A.)

856/5. D. AEMULA (Ait.) O. Ktze. BEN.: Rueval; Wiay. (A.H.G.A.)

856/7. D. OREOPTERIS (Ehrh.) Maxon. BEN.: Rueval.

858/1. POLYPODIUM VULGARE L. BEN.: Wiay.

864/1. OSMUNDA REGALIS L. BEN.: Wiay.

865/1. BOTRYCHIUM LUNARIA L. N.U.: Near Newton Ferry, sea cliffs; field near Goulaby burn. S.H.: Rodel.

866/1. OPHIOGLOSSUM VULGATUM L. N.U.: Newton, cliffs near the sea and in a damp hollow among dunes.

870/7. LYCOPODIUM SELAGO L. BEN.: Rueval. N.U.: Beinn Mhor.

871/1. SELAGINELLA SELAGINOIDES (L.) Link. N.U.: Newton.

872/2. NITELLA OPACA Ag. S.U.: Near Askernish. (G. O. Allen.)

Records, previous to 1932, not included in G. C. Druce's *Comital Flora*. (Only the earliest records so far traced are given.)

20/1c. NYMPHAEA OCCIDENTALIS (Ostenf.) Moss. LEWIS: Loch Valtos, G. C. Druce in *B.E.C. 1928 Rep.*, 602, 723 (1929).

37/1. ARABIS HIRSUTA (L.) Scop. Bernera (W. S. Duncan), Bennett, *Scot. Nat.*, 1891, 188.

89/4. POLYGALA OXYPTERA Rchb. S.U.: West side, "growing near to or with *P. eu-vulgaris*" (A. Somerville), Bennett, *A.S.N.H.*, 1910, 168.

194/19 & 20. ROSA TOMENTOSA Sm. Outer Hebrides, Macgillivray, 1830, ii, 91. (The *Comital Flora* does not distinguish *R. tomentosa* from *R. omissa*, and all records of *R. tomentosa* may prove to refer to *R. omissa*.)

265/3. OENANTHE CROCATA L. Outer Hebrides, "is also abundant along the rivulets as is *Hippuris vulgaris* in the marshes." W. Macgillivray, 1830, ii, 94. Specimen from S.U., dated "7.88," Somerville, in Herb. Mus. Brit.

543/9. VERONICA AQUATICA Bernh. BEN.: Ditches near coast, west side, Shoolbred, 1895, 244, as *V. anagallis-aquatica*, var. *aquatica* Bosch.

606/8. Atriplex sabulosa Rouy. Outer Hebrides, W. Macgillivray, 1830, ii, 93, as *A. laciniata*. Shoolbred and Somerville specimens in Herb. Mus. Brit.

745/2. Eleocharis uniglumis (Link) Schultes. "Barvas, Isle of Lewis," Babington, *Manual*, 1847, ed. 2, 349. Babington undated specimen in Herb. Mus. Brit. from this locality. Balfour and Babington were in Outer Hebrides in 1841.

794/2. Avena pubescens Huds. "*A. pubescens* 110!" (Somerville), Bennett, 1888, 247, 260. (Also Somerville, 1889 A.)

826/4. Festuca elatior L. "Roddal in Harris," Balfour and Babington, 1844, i, 152.

PANSY RECORDS.

Compiled by Hilda Drabble.

The following list of pansies has been compiled from identifications made by the late Dr Eric Drabble and recorded by him in his record book, as was his custom, with a view to publication from time to time. All records published by him and those which have appeared in the British and Watson Exchange Club Reports have been excluded.

As far as was possible, collectors' names have been given and place-names have been verified from the Gazetteer of the British Isles.

Cornwall (1, 2).

V. segetalis Jord., f. obtusifolia (Jord.)—Hayle (E. Vachell).

Devonshire (3, 4).

V. Deseglisei Jord.—Meldon, Marland (H. H. Harvey).

Somerset (5, 6).

V. ruralis Jord.—Woolard Hill (H. S. Thompson).

Wiltshire (7, 8).

V. agrestis Jord.—Road (P. Leake).

V. Deseglisei Jord.—Conkwell (August 1833, Herb. Bab.).

Dorset (9).

*V. lepida Jord., f. carpatica (Borbás)—Swanage (J. D. Gray, 1895).

V. maritima Schweig.—Littlesea (J. D. Gray, July 1895, in Herb. Univ. Camb.). Of this plant, Dr Drabble wrote: "This narrow-leaved plant seems to be identical with Druce's Norway plant, q.v., which I believe to be the Baltic *maritima*." (See also *infra* under *V. sabulosa* from Ireland.)

Hampshire (11, 12).

V. ruralis Jord.—Fleet (G. Watts).

V. variata Jord., var. sulphurea Drabble—Micheldever (P. M. Hall).

Sussex (13, 14).

V. segetalis Jord.—Parkhurst (R. J. Burdon and J. E. Little).

V. ruralis Jord.—Greatham (J. E. Lousley).

*V. arvatica Jord.—Mayfield (K. Pickard); Hastings (1836, C. E. Broome); Cross-in-Hand (1835, Herb. Bab.).

Kent (15, 16).

V. Deseglisei Jord.—Cuxton, Meopham (A. R. Horwood).

*V. latifolia Drabble—Sundridge (J. E. Lousley).

V. Lloydii Jord., var. insignis Drabble—Sevenoaks (J. E. Lousley).

V. variata Jord.—Westerham (G. Watts).

Surrey (17).

V. ruralis Jord.—Witley (G. M. Ash); Leatherhead (Mrs Wedgwood).
V. anglica Drabble—Molesey (Mrs Wedgwood).
V. contempta Jord.—New Haw, Weybridge (J. E. Lousley).
V. Lejeunii Jord.—Compton (J. E. Lousley).
V. variata Jord., var. sulphurea Drabble—Byfleet (J. E. Lousley); Witley (G. M. Ash).

Essex (18, 19).

*V. contempta Jord.—Saffron Waldon (H. Phillips).
V. variata Jord.—Saffron Waldon (A. R. Horwood).

Hertfordshire (20).

V. Deseglisei Jord.—Pirton (H. Phillips).
V. contempta Jord.—Wilbury Hill, Wymondley (H. Phillips).
*V. Lejeunei Jord.—Hitchin (J. E. Little).
V. variata Jord.—St Ippolyts, Hitchin (J. E. Little).
*V. monticola Jord.—Hitchin, Wilbury Hill, Cole Green, Royston, Stevenage (H. Phillips).

Middlesex (21).

*V. variata Jord., var. sulphurea Drabble—Harefield.

Berkshire (22).

V. agrestis Jord.—Frilford (E. S. Todd); Sandford Mill (J. E. Lousley).
*V. segetalis Jord.—Frilford (E. S. Todd).
*V. arvatica Jord.—Sandford Mill, near Twyford (J. E. Lousley).

Oxfordshire (23).

V. Deseglisei Jord., f. subtilis (Jord.)—Tadmarton (E. Vachell).
V. ruralis Jord.—Henley-on-Thames (E. Vachell).

Buckinghamshire (24).

V. segetalis Jord., f. obtusifolia (Jord.)—Stowe (E. Vachell).
V. contempta Jord.—Hambledon (E. Vachell).
V. monticola Jord.—Ivinghoe (H. Phillips).

Suffolk (25, 26).

V. Deseglisei Jord.—Neyland (J. D. Gray, 1884).
*V. segetalis Jord.—Stowlangtoft (L. M. Rickards, 1840).
V. variata Jord.—Holywell Row (J. E. Lousley).
var. sulphurea Drabble—Holywell Row (J. E. Lousley).

Norfolk (27, 28).

*V. agrestis Jord.—Diss (E. Vachell).
V. Deseglisei Jord.—Thompson (E. S. Todd).
*V. contempta Jord.—Caistor-on-Sea (H. Phillips).

V. VARIATA Jord.—Kelling, near Holt (Herb. Bab.).
var. SULPHUREA Drabble—Heath near Cromer.
V. LUTEA Huds., f. PESNEAUI Lloyd and Foucaud—Burnham Heath (Dr Hind, 1883).

CAMBRIDGESHIRE (29).

V. AGRESTIS Jord.—Ickleton (A. R. Horwood).
V. DESEGLISEI Jord.—Hildersham (J. E. Lousley); Gog-Magog Hills (J. S. Henslow, 1826).
*f. SUBTILIS (Jord.)—Hardwick (E. Vachell).
V. CONTEMPTA Jord.—Fleam Dyke (A. R. Horwood).
V. VARIATA Jord.—Cambridge (1839, Herb. Bab.).
*V. LUTEA Huds., f. PESNEAUI Lloyd and Foucaud—Newmarket Heath (1831).

BEDFORDSHIRE (30).

*V. CONTEMPTA Jord.—Barton, Clifton, Leagrave (H. Phillips).
*V MONTICOLA Jord.—Arsley (H. Phillips); East Tingley Wood (J. E. Little).

HUNTINGDONSHIRE (31).

V. AGRESTIS Jord.—Woodwalton Fen (H. Phillips, 1932).

MONMOUTHSHIRE (35).

*V. ARVATICA Jord.—Penhow (E. Vachell).
*V. CONTEMPTA Jord.—Monmouth (E. Vachell).

HEREFORDSHIRE (36).

V. AGRESTIS Jord.—Storridge (F. M. Day).

WORCESTERSHIRE (37).

V. AGRESTIS Jord.—Broadway (E. Vachell).

STAFFORDSHIRE (39).

V. DESEGLISEI Jord.—Needwood Forest (1832, Herb. Bab.).
*V. ARVATICA Jord.—Needwood Forest (1832, Herb. Bab.).
*V. DERELICTA Jord.—Needwood Forest (1832, Herb. Bab.).

SHROPSHIRE (40).

V. RURALIS Jord.—Monkmoor (1839, W. A. Leighton).
*V. VARIATA Jord., var. SULPHUREA Drabble—Monkmoor (1839, W. A. Leighton).
V. LEPIDA Jord.—Gunshill (1839, W. A. Leighton).
V. LUTEA Huds.—Clee Hills (1835, J. S. Baby); West Felton (W. A. Leighton).

GLAMORGANSHIRE (41).

V. AGRESTIS Jord.—The Leys (E. Vachell); Porthcawl (Miss Thomas).
V. SEGETALIS Jord., f. OBTUSIFOLIA (Jord.)—Llandaff (E. Vachell).
V. LEJEUNEI Jord.—Llandaff (E. Vachell).

BRECKNOCKSHIRE (42).

V. SEGETALIS Jord.—Llyswen (E. Vachell).

Radnorshire (43).

V. lutea Huds.—Rhayader (E. Vachell).

Pembrokeshire (45).

V. latifolia Drabble—Haverfordwest (A. E. Ellis).

V. lutea Huds., f. Curtisii (Forster) and f. Pesneaui Lloyd and Foucaud.—St Davids (A. E. Ellis).

Cardiganshire (46).

V. lutea Huds.—Devil's Bridge (1848, Herb. Bab.).

Merionethshire (48).

V. lutea Huds.—Llandrillo (A. E. Cook); Towyn (1839); Trawsfynydd (1832, Herb. Greville).

Carnarvonshire (49).

*V. variata Jord.—Little Orme (1836, Herb. Bab.).

V. lutea Huds.—Penmaenmawr (R. Tennant); Rhaidr, Dolgarrog (1828, W. Williams).

Lincolnshire (53, 54).

V. Deseglisei Jord.—Great Ponton (S. C. Stow).

Rutland (55 in part).

V. ruralis Jord.—Great Casterton, Ketton (M. E. Edmonds).

V. anglica Drabble—Pickworth, Woolfox, Ketton, Barrowden Heath (M. E. Edmonds).

Derbyshire (57).

V. lepida Jord.—Hippersick (E. and H. D.).

V. lutea Huds., f. amoena Henslow—Chee Dale (1881, J. S. Rouse).

Cheshire (58).

*V. lutea Huds., f. Pesneaui Lloyd and Foucaud—New Brighton (1846, F. Sansome).

Lancashire (59, 60, 69 in part).

*V. agrestis Jord.—Heysham (M. Page).

V. segetalis Jord., f. obtusifolia (Jord.)—Southport (1882, J. C. King).

V. Lloydii Jord.—Near Roudsea Wood (W. A. Sledge).

V. variata Jord.—Heysham (M. Page); Roudsea Wood (W. A. Sledge).

Yorkshire (61, 62, 63, 64, 65).

*V. segetalis Jord.—Mieklefield (W. A. Sledge).
f. obtusifolia (Jord.)—Allerthorpe Common (W. A. Sledge).

V. ruralis Jord.—Near Searborough (E. S. Todd).

V. Lloydii Jord.—Wooden (J. G. Baker, 1858). "These large, yellow-flowered plants include a few cultivated specimens which after

one year's cultivation retain their characters exactly and are definitely large yellow *Lloydii* " (E.D.).

*V. MONTICOLA Jord.—Rillington (1886, G. Webster).

V. LEPIDA Jord.—Wharncliffe (1838, A. Bloxam).

V. LUTEA Huds.—Marrick Moor, Swaledale (1863, J. G. Baker).

WESTMORLAND (69 in part).

V. LUTEA Huds., f. SUDETICA Willd.—Kendal (1838, K. N. Lingwood).

ISLE OF MAN (71).

*V. SEGETALIS Jord., f. OBTUSIFOLIA (Jord.)—Ballaugh (C. J. Paton).

WIGTOWNSHIRE (74).

V. CURTISII Forster, f. FORSTERI—Near Wigtown (M. Wilson).

PEEBLES (78).

V. LUTEA Huds., f. AMOENA Henslow—Carlops (F. M. Day).

PERTHSHIRE (87, 88, 89).

V. SEGETALIS Jord., f. OBTUSIFOLIA (Jord.)—Killin (K. D. Little).

*V. VARIATA Jord.—Aberfeldy (E. Vachell).

ABERDEENSHIRE (92, 93).

V. LUTEA Huds., f. POLYCHROMA (Kerner)—Castleton (1854, A. Croall).

f. SUDETICA Willd.—Ballater (1847, H.H.).

f. PESNEAUI Lloyd and Fouc.—Cruden Bay (J. R. Tennant).

INVERNESS-SHIRE (96, 97).

*V. LUTEA Huds., f. PESNEAUI Lloyd and Fouc.—Sands near Mormar (W. A. Sledge).

SUTHERLAND (107, 108).

V. DERELICTA Jord.—Altnaharra (E. Vachell).

*V. LLOYDII Jord., var. INSIGNIS Drabble—Altnaharra (E. Vachell).

V. LEJEUNII Jord.—Altnaharra (E. Vachell).

V. LUTEA Huds., f. AMOENA Henslow—Tongue (M. Wilson).

ORKNEY AND SHETLAND (111, 112).

*V. VARIATA Jord.—Linkness, Hoy Orkney (H. H. Johnston).

*V. DERELICTA Jord.—Ness-in-Yell, Shetland (1865, R. Tate).

IRELAND.

Of specimens of V. CURTISII Forster from Mullaghanoe, Sligo (T. H. Corry, 1882) and from Tramore, Waterford (1858, Herb. Bab.) Dr Drabble wrote that these are f. *Forsteri* not f. *Symei*. This is of interest as former records from these localities were f. *Symei*. (" Notes on Irish Pansies," *Journ. Bot.*, May 1930, p. 143.) f. *Forsteri* has smaller yellow flowers than has the sand-dune form f. *Symei*.

Of a specimen from Portmanock Sands, Co. Dublin, June 1837, John Ball or Bell) labelled V. TRICOLOR, var. CURTISII Mack.! Dr Drabble wrote: "A narrow-leaved, only slightly hairy plant with yellow flowers. This is the only British or Irish plant I have seen meriting the name *sabulosa* Bor." and he records the plant as *V. Curtisii*, var. *sabulosa*. Referring to *sabulosa* ("Notes on British Pansies," *Journ. Bot.*, August 1927, p. 218) Dr Drabble says: "Whether or not true *sabulosa* is identical with *V. tricolor*, var. *maritima* Schweigger (Marss. *Fl. Neupommern*, 58) I have not yet determined."

THE BRAMBLE PLATES OF SYME'S ENGLISH BOTANY.

Wm. Watson.

Thirteen plates illustrate the fruticose brambles in Syme's *English Botany*, vol. iii (1864). Eleven of these are reproduced from the plates of the original *English Botany*, with different names in some instances; two are new. Nowadays one does not go to *English Botany* for a knowledge of British brambles, but the plates are good, and with the right names appended would be useful still. To supply these, to justify them when they are not the names of the *London Catalogue*, and to correct a few misleading features of the plates, is the object of the present notes.

Plate 444.—*Rubus suberectus.* The plate is correct for *R. suberectus*, but the older name, *Rubus nessensis* Hall, *Trans. Roy. Soc. Edin.*, iii (1794), 20, must be restored. In Hb. Smith there is a garden specimen sent by John Mackay in 1800 as "*R. Nessensis*," and also an unnamed specimen sent by Sir Joseph Banks from his garden in 1798. Both specimens are *R. suberectus*. It seems permissible to believe that Banks had obtained the plant from an authentic source soon after the publication of it as a new species by Hall, and he may have sent the specimen to Smith with a view to the inclusion of *R. nessensis* in the *Flora Britannica* (1800-1804). On another specimen in Hb. Smith Withering says the plant was pointed out to him in 1796.

This points to a general recognition of *R. suberectus* as *R. nessensis* among British botanists soon after Hall published his species. There is apparently no contemporary instance of any other bramble being identified as *R. nessensis*. When later Anderson published *R. suberectus* he stated that it was the same as *R. nessensis*, but "the impropriety of Mr Hall's specific name will I hope be a sufficient excuse for my changing it." That, however, is not a ground on which the name can be altered.

Hall's description, according to Babington, runs "Rubus (Nessensis) foliis quinato-digitatis, ternatis, septenisque nudis, caule subinermi, petiolis canaliculatis; stolonibus erectis biennalibus." Hall also says that the fruit is of the colour of the red mulberry, and has a peculiar taste.

Rogers says (*Journ. Bot.* 1895, 46) that this description is inadequate to prove that the bramble intended is *R. suberectus*, that the value of Anderson's testimony was destroyed by his knowing nothing of *"*R. fissus*," as it was not described until twenty years later, and that the character "petiolis canaliculatis" belongs to "*R. fissus*" and not to *R. suberectus*.

I have always found the petioles of *R. suberectus* furrowed throughout though not so deeply as in "*R. fissus*," and Leighton found the same,

*The bramble intended by Rogers under the name of *R. fissus* is not the *R. fissus* of Lindley. Hence the use of inverted commas.—W.W.

and he cannot have been copying from Hall as he thinks he is describing *R. plicatus*. It is *R. sulcatus* not *R. suberectus* that has flat petioles.

Only two British brambles have red fruit, viz. *R. suberectus* and "*R. fissus*." Of these it is *R. suberectus* that has the fruit with a peculiar taste. I have experienced it myself, Leighton records it, and Lefèvre and Boulay and Focke. Furthermore, all the characters given by Hall apply to *R. suberectus*, but some do not apply to "*R. fissus*," viz. "Foliis nudis, caule subinermi, stolonibus erectis." One wonders how Rogers missed these indications when two of the characters are just those that he singled out as distinctive of *R. suberectus* in his own Conspectus, thus: "*R. suberectus*: Prickles few (sometimes wanting). Leaves subglabrous." "*R. fissus*: Prickles many. Leaves conspicuously hairy beneath."

Rogers's suggestion that Anderson could not have known "*R. fissus*" because it was not described until twenty years later, and the implication that he could not have told Hall's plant for the same as his own without first knowing "*R. fissus*," cannot either of them be supported. Actually "*R. fissus*" was known to Borrer and Bicheno by a manuscript name—which it is not advisable to give here—many years before any description was published, and was being discriminated by them from *R. suberectus*. And even if Anderson did not know "*R. fissus*" it was sufficient that he should know *R. suberectus* to be able to recognise from Hall's description or a specimen of Hall's that it was that species.

The opposition to replacing *R. suberectus* by *R. nessensis* Hall, therefore, seems to rest entirely on mistaken grounds. Druce in *Fl. Berks.*, Halacsy in his monograph of the Austrian brambles, and Robert Keller in *Fl. Schweiz* and in Hegi's *Flora*, have adopted *R. nessensis*.

Plate 445.—*Rubus plicatus*. The name holds good. The basal leaflets are drawn with stalks 5 mm. long: they should be only 1-2 mm. The leaflets are too coarsely toothed (mostly with only one intercostal tooth) to be representative.

Plate 446.—*Rubus rhamnifolius*. The expanded flowers should be white or only very faintly pinkish, and the underside of the leaves of the flowering branch should be white. The characteristic tendency of these leaves to curl up is shown. The stem-piece and attached leaf belong to *R. polyanthemus*. The carpel should be glabrous or nearly so The middle branches of the panicle are slightly wilted and have assumed unnatural directions; they should be spreading.

No one any longer contends that the plant is *R. rhamnifolius*, as it was named by Smith in 1824 at the instigation of Bicheno, Borrer and E. Forster, though some will not give up the name. It is acknowledged by Rogers in the Handbook that the English bramble agrees exactly with specimens of *R. cardiophyllus* L. & M. collected in Normandy by Letendre. The correctness of Letendre's specimens is attested by Lefèvre, one of the joint authors of the species and the collector of the actual specimen—in the north of France—on which the species was founded.

The objection is made (*Rep. B.E.C.*, 1934, 964) that Mueller describes the toothing as "very coarse nettle-like." Mueller's words are, "Bezahnung fast nesselartig eingeschnitten gesägt." (Toothing *almost* nettle-like incise serrate.) The Handbook has "teeth rather coarse on luxuriant bushes," and might have gone further than this, as in both Hb. Kew and Hb. Mus. Brit. there is a sheet of *R. cardiophyllus* of British origin in which the leaves are quite as deeply incised as in any nettle. One does not, of course, contend that such leaves are characteristic, either in the case of the French or the British plant; but there is no reason to suspect that Mueller was describing another plant, which is the implication that is made. Surely the same name must be used to designate normal-leaved examples of the same species.

Another objection made by Rogers is that Genevier gives the stalk of the terminal leaflet as nearly one-third of the length of the leaflet, instead of one-half of the length. Rogers does not seem to have consulted the second edition of Genevier's book, which gives "foliole terminale à pétiole égalant la 1/2 de sa hauteur;" but the point ceases to be of any importance if it is remembered that Mueller was describing a specimen sent by Lefèvre, and that in the bramble in question the terminal petiolule varies from one-third to the whole length of the terminal leaflet. Also Genevier is not the author of the species, and his herbarium shows that his bramble is not the same as that of Lefèvre.

Our plant agrees exactly with Letendre's specimen, vouched for by Lefèvre, and also with the excellent plate of *R. cardiophyllus* given by Sudre. We must accordingly adopt that name.

PLATE 447.—*Rubus discolor*. The styles are shown green in Syme. In the original plate they are red, as is constantly the case in the British plant, except in the white-flowered form. The sepals should be pallid white, inside and out, not green. The earliest name must be adopted, viz. *R. ulmifolius* Schott fil. in *Isis* (1818), 821.

PLATE 448.—*Rubus leucostachys* Smith. Name correct, and the original plate correct. The filaments are always pink, but in some issues they are not so shown. The sharp-angled stem, the rather short stem prickles, the light red prickles of the inflorescence, the incised and ovate or obovate terminal leaflets, all prove that this bramble is different from *R. vestitus* Wh. (figured in *B.E.C. 1928 Rep.*, but better in Sudre's book).

The specimen drawn on Plate 448 was gathered by Borrer at Henfield, and was evidently the same as others which he sent from that place to Smith with a description which the latter used in *Engl. Flora*. Smith treated Borrer's specimens as his type, comparing with them specimens that he had also received from E. Forster and Bicheno. Their specimens are still in Hb. Smith and are likewise *R. leucostachys*, not *R. vestitus*. On one sheet of Borrer's specimens Smith has added "Engl. Flora v. 2, 403," as if indicating that as his type.

Smith's *R. rhamnifolius* b. *cordifolius* received from E. Forster, who obtained it in a wood adjoining his fields at Hale End, Walthamstow, is a shade form of *R. vestitus*. Bicheno knew the plant well as *R.*

cordifolius, and informed Smith that it was frequent in the woods of the south. *R. vestitus* was thus distinguished by Smith and his contemporaries from *R. leucostachys*. It was not until 1829 when Borrer cut a specimen from a coarsely grown bush of *R. vestitus* in the garden of the Horticultural Society, and labelled it in his herbarium "possibly *R. vestitus* W. & N.'s specimen, but I rather think it *R. leucostachys*," that the confusion began which was to end finally in the complete eclipse of *R. leucostachys* in *R. vestitus*.

R. leucostachys is a frequent bramble in W. Kent, Surrey, W. Sussex, E. Sussex, Berks., N. Hants., Bucks. and S. Essex. It occurs in the north of France also.

PLATE 449.—This is not correctly determined as *Rubus Grabowskii*. The drawing of the fruit shows that the plant was semi-infertile. The specimen came from Henfield, and in Hb. Babington and Hb. Borrer are several specimens collected there by Borrer. They are, in my opinion, *R. leucostachys* Smith × *R. mutabilis* Genev., var. *Naldretti* White.

The petiolules and filaments are an intense red in the original plate, but are shown respectively green and yellow in later issues.

PLATE 450.—This is *Rubus macrophyllus* of Lees but not of Weihe, as is shown by the small and stout prickles and the white flowers. The sepals are again too green, and hairs should have been shown on the green carpels. Rogers distinguished this from *R. macrophyllus*, making it a variety of *R. pubescens* and placing it in the group *Discolores*. It is, however, a forest bramble, and goes better in the *Silvatici* as an independent species. As such the correct name for it is *Rubus subincrmoides* W. Wats., *B.E.C. 1928 Rep.*, 859, 1929.

PLATE 451.—This and the next were new plates drawn for Syme's book. Both plants grew at Twycross, and the specimens were apparently provided by Bloxam, whose help is acknowledged by Syme.

There is an earlier *Rubus mucronulatus* as well as a *Rubus mucronatus*, under which name Bloxam first described the plant. It has accordingly been renamed *R. mucronifer* by Sudre, and it must now be called by that name.

PLATE 452.—Not *Rubus Radula*, but *R. radulicaulis* Sudre. There is a description of it in the Handbook under the name of *R. radula* Wh. subsp. *sertiflorus* (P.J.M.)? The petals in the plate are of too pale a pink and the sepals are too green. The stamens are shown white instead of rose pink. For all this the habit of the plant is accurately conveyed.

PLATE 453.—Not *Rubus Kochleri*, but *R. mutabilis* Genev., var. *Naldretti* J. W. White.

Borrer sent two specimens of this bramble to Smith in December 1823 from Henfield, W. Sussex, with a description as *Rubus glandulosus* Schleich. for inclusion in *English Flora*. The specimens are in Hb. Smith. On the original plate of *English Botany Supplement* the name is *Rubus glandulosus*, but Borrer changed the identification to *R. Kochleri* when he found *R. Bellardi* in Yorkshire: see the next number.

In some issues of Syme the petals are white, but they should be pink, and are so in the original plate. The sepals are again too green.

PLATE 454.—The name *Rubus glandulosus* Bell. was at one time generally supposed to have been intended for this bramble, but this has since proved to be a mistake, and the name has had to give way to *R. Bellardi* Whe. The axes are coloured too bright a red; they should be a dull brown. The lowest branch bearing a ripe fruit when the primary flower of the panicle has only just unclosed seems impossible.

PLATE 455.—*Rubus corylifolius* Smith. Correct.

PLATE 456.—*Rubus caesius* Linn. Correct, except that the flowers should be quite white and the fruit glaucous. I think this is the variety *hispidus* Bab.

THE IRISH MARSH ORCHIDS.

Patrick M. Hall, F.L.S.

[Note on Nomenclature.—In this paper the name *O. latifolia* L. is used following Pugsley, *Journ. Linn. Soc., Bot., 49*, No. 332, p. 553-592 (1935), i.e. = *O. incarnata* auct. *non* L., see *B.E.C. 1935 Rep.*, 114-8 and 145-6 (1936). For the two sub-species of *O. maculata* L. agg., the names *O. maculata* L. and *O. elodes* Griseb. are used in order to avoid confusion, since reference is made to papers by Messrs Pugsley and Wilmott, in which these two names are used. It is perhaps also necessary to point out that "Britain" connotes the British Isles excluding Ireland.]

INTRODUCTION.

The importance attaching to Mr Pugsley's explanation of the true significance of the name *O. latifolia* L. (*loc. cit. supra*) had the effect of overshadowing another matter of exceptional interest in the same paper. I refer to his discovery of *O. majalis* Reichb., var. *occidentalis* "var. nov." in Counties Clare and Galway. Interest was still further stimulated when, on April 2nd, 1936, Mr Pugsley and Mr Wilmott in turn addressed the Linnean Society on the subject of "New British Marsh Orchids," see *Proc. Linn. Soc.*, Session 148, 121-130 (1936). In the course of their respective papers, Mr Pugsley proposed to change the rank of his *occidentalis* from variety to sub-species, and described a second new sub-species *Traunsteinerioides* of *O. majalis* from Co. Wicklow, while Mr Wilmott described *O. kerryensis* "sp. nov." from Dingle, Co. Kerry, a putative hybrid of the latter with one of the sub-species of *O. maculata* agg., probably *elodes*, under the name ×*O. dinglensis*, and also described *O. Francis-Drucei* "sp. nov." from West Ross, Scotland.

It was difficult to believe that there existed in Ireland three Marsh Orchids, of whatever rank, at once distinct from one another and from all known British forms, all related to a Continental species not previously recognised as British, and all overlooked in the past by native Irish and visiting British botanists. But a study of the available documentary evidence in the form of dried material, drawings and photograps seemed to indicate that such was indeed the case.

As this opened up such a wide field for research, Mr N. Douglas Simpson and I decided to spend a fortnight in Ireland in May 1936 with the primary objectives of investigating the Marsh Orchids of the West Coast and of County Wicklow, and of making an adequate collection of material for the Herbarium of the British Museum.

THE DATA.

The following information was available at the commencement of the inquiry, but it must be remembered that Pugsley's and Wilmott's papers read on April 2nd were not published in print until August 26th, 1936.

Pugsley had recently described *O. majalis* Reichb., var. *occidentalis* [*loc. cit.* (1935) 586], the grade of which was subsequently raised to sub-species. This was described as follows:—" Tubers deeply palmate, with two or more elongate segments. *Stem* 10-20 (rarely -30) cm. high. *Leaves spreading and mostly arcuate-recurved, rather broadly lanceolate*, the upper distinctly dilated above the base, usually heavily spotted with brown. *Spike short and dense-flowered.* Flowers dark purple; lip 7-8 mm. long, 9-10 mm. broad, with broad, rounded or bluntly angled side lobes, and a much narrower but obtuse central lobe generally not exceeding them in length, variegated with irregular darker lines and spots; spur cylindrical, nearly as long as the ovary," and was said to differ from the typical species " in its dwarfer habit, shorter, broader, and recurved leaves, and short dense spike of dark flowers, with a short central lobe to the lip." It was described from specimens collected between May 16th and 20th, 1933, from five localities in Clare and S.E. Galway, viz.:—Lisdoonvarna (type-locality), Ardrahan, Gort, L. Bunny, and Poulsallagh.

Orchis kerryensis was described by Wilmott [*loc. cit.* (1936) 126] as having all leaves quite unspotted and a spike of large pinkish mauve flowers recalling the colour of *Geranium pyrenaicum* and " Labellum nearly flat with concave sides; the lamina (c. 8 mm. broad) broader than long (or including the somewhat exserted middle lobe about as long as broad), transversely sub-oblong obcordate, slightly crenate or subentire, the median lobe sub-rhombic-orbicular or sometimes more acutely pointed; except at the whitish base pinkish mauve, with numerous brilliant deeper spots which generally almost unite into a definite line about the middle of each side. Spur comparatively slender (c. 7 mm. long and except for the expanded mouth c. 1 mm. broad), much shorter than the long ovary." This plant was described as a new species from a small colony found on June 23rd, 1934, near Dingle, Kerry, all of which were uniform except for two plants, one of which had spotted leaves and was put down as a hybrid with some form of *O. maculata* or *O. elodes*. In emphasising the differences between his new species and other British species, it is to be noted that Wilmott says:—" Mr Pugsley would probably place the plant as a sub-species of *O. majalis* Reichb. . . . " while Pugsley [*loc. cit.* (1936) 122] mentions having seen this plant with Dr Praeger at Kenmare and Cloghane on June 19th and 21st, 1934, respectively, referring to it in the following terms: " . . . somewhat resembles var. *occidentalis* Pugsl. in habit and the form of the labellum, but its foliage is normally unspotted and the flowers are of a lighter purple, with the lip conspicuously spotted rather than variegated."

It was clear, therefore, that the authors of these two forms realised that they were related, and it appeared that while *occidentalis* had its leaves usually heavily spotted and a variegated lip-pattern, *kerryensis* was to be distinguished by its unspotted foliage and broad labellum with a pattern of dots. The plate accompanying the description of *kerryensis* portrays a stout plant with broad unspotted leaves and a dense spike of

flowers having broad labella with a pattern of dots upon a light background.

O. Francis-Drucei Wilmott is shown upon the same plate and although it is described from Scottish specimens, reference must be made to it here. This species is described (*loc. cit.*, 128) as having a slender stem 11-13 cm. high, 4 narrow unspotted leaves and a lax spike of 5-8 flowers only, which have subdeltoid-obtriangular labella, with a long, projecting, narrowly triangular middle lobe about two-thirds the length of the lamina. The labellum has intense reddish purple markings on a white ground and the characters of the plant are well displayed by the plate. Resemblances with, as well as differences from, *O. Traunsteineri* Saut. are indicated.

O. Traunsteinerioides was described by Pugsley as a sub-species of *O. majalis* Reichb. [*loc. cit.* (1936) 124] and was illustrated in the accompanying Plate 2. Distinguishing characters are that the stem is flexuous, the leaves are linear-oblong and (except the uppermost) obtuse, sometimes marked with small, ± transverse, brown spots, sometimes unspotted, the flowers are bright purple and the labellum subdeltoid, cuneate at the base, more or less flat but ultimately reflexed at the sides, slightly 3-lobed with ± triangular, obtuse or angled, lateral lobes and a much narrower midlobe which is obtuse and often not longer than the side lobes. This species was described from two localities in Co. Wicklow and though having features in common with *O. Traunsteineri* Saut. is considered to be distinct from that species and placed under *O. majalis* Reichb.

The publication of *O. majalis* Reichb., var. *occidentalis* Pugsl. was anticipated in Dr R. Ll. Praeger's indispensable book " The Botanist in Ireland " (1934), and in his Census List (p. 527) *O. majalis* Reichb. is credited to four vice-counties, Limerick, Clare, S.E. Galway and Wicklow, while *O. purpurella* Steph. also appears in the list from seven vice-counties, Wexford, Wicklow, Dublin, W. Mayo, Sligo, Down and Antrim, with the note " ? Frequent." The general index shows no references in the text to *O. purpurella*, but reference is made to the occurrence of *O. majalis* in Wicklow (§ 275) and in West Limerick, " on the hills " (§332), while in writing of the Central Clare limestones (§344) Praeger says, " *Orchis majalis* is frequent in the form *occidentalis*, extending into Burren and the shale country at Lisdoonvarna."

In §410 Praeger says " Botanists visiting Mallaranny should watch for *Orchis Traunsteineri*, which E. S. Marshall believed he saw there." Marshall's exsiccata No. 2305 from Mallaranny, now in Herb. Mus. Brit., were named by him *O. latifolia*, var. *brevifolia*.

Druce's " Comital Flora " (1932) mentioned no Irish record of *O. purpurella*, but recorded *O. praetermissa* Dr. as an Irish plant from five vice-counties, West Cork, Clare, West Galway, Dublin and East Donegal. It is also to be noted that under " *O. latifolia* L.," which represents the plant now known as *O. pardalina* Pugsl., this entry appears:—" [H-1-3, 6, 8, 12, 16, 17, 23, 26-28, 32, 39]. All errors; these are mostly *praetermissa*."

"Scully's "Flora of County Kerry" (1916) gives practically no detailed information about the Marsh Orchids, but "*O. latifolia* Linn." is said to be common, often abundant in wet meadows and pastures, damp places in sandhills, etc., and to flower from May to July. The following paragraph on p. 279 may be significant:—"When this and the preceding plant ("*O. incarnata* Linn.") grow together, as they sometimes do abundantly, intermediate forms have been gathered which could not be referred definitely to either species. Mr Marshall, who noticed similar forms about Castlegregory, etc., has suggested a hybrid origin for these plants."

The information, therefore, which was available to us at the outset, was only sufficient to show that the Irish Marsh Orchids presented a considerable number of problems to be solved. Apart altogether from *O. latifolia* L., which was known to be generally distributed in Ireland, five other species or subspecies had been named as growing in Ireland. How many of these were distinct (a) from one another (b) from other British species? Were *O. purpurella* and *O. praetermissa* correctly recorded as Irish species or not?

It appeared likely that the Marsh Orchids in question were of sporadic occurrence and might be difficult to find: therefore detailed directions, which we gratefully acknowledge, were obtained from Messrs. Pugsley and Wilmott, and for the Wicklow orchid from Mr J. P. Brunker of Dublin. Directions for the latter proved to be indispensable, but in the West of Ireland the result exceeded our most sanguine expectations, since we saw and collected Marsh Orchids in varying numbers, from Three Castles Head, West Cork to Achill Island, West Mayo, on each of the ten days, May 17th-26th inclusive.

Although the observations made and the material collected were both considerable, I do not think that it is possible to base categorical decisions of the questions involved on the data obtained from a single short expedition, but I propose to set out the data in some detail and record the impressions formed, as a starting point for further investigation.

ITINERARY.

It may be worth while to set out the actual route followed, for the benefit of others who may pursue this study, since it will enable them either to follow the same route in other years and at other times of the year, or to break fresh ground.

1936.

May 15-17—Dublin to Cork.

,, 17—Cork — Skibbereen — Baltimore — Skibbereen — Three Castles Head — Bantry — Glengariff.

,, 18—Glengariff — Adrigole — Cloonee L. — Kenmare — Parknasilla — Castle Cove — Derrynane—Waterville.

,, 19—Waterville — Ballaghisheen Pass — Bealalaw Bridge — Beaufort — Killarney.

,, 20—Killarney — Castlemaine — Inch — Dingle.

May 21—Dingle — Ballybrack — Brandon Mountain — Dingle — Connor Hill Pass — Cloghane.
,, 22—Cloghane — Mullaghveale — L. Gill — Tralee — Abbeyfeale — Newcastle — Limerick — Ennis.
,, 23—Ennis — Ennistymon — Lisdoonvarna — Poulsallagh — Black Head — Ballyvaghan — Kilfenora — Ennis.
,, 24—Ennis — L. Skaghard — Garryland — Gort — Kinvarra — Galway.
,, 25—Galway — Recess — Roundstone — Bunowen — Clifden — Renvyle — Leenane — Westport.
,, 26—Westport — Newport — Mallaranny — Achill I. — Newport — Pontoon — Swineford — Roscommon.
,, 27—Roscommon — Lanesborough — Termondbury — Longford — Mullingar — Dublin — Enniskerry — Glendalough.
,, 28—Glendalough — Lugnaquilla — Glendalough — Dublin.

It is to be remembered that in Ireland, as in England, the spring of 1936 was exceptionally cold. Heavy snow fell on the Wicklow Mountains in April, and Mr Brunker advised us to leave the Wicklow orchid as late as possible. The lateness of the season may have had a two-fold result—i, in retarding the orchids; ii, in retarding other vegetation. In my experience the Orchidaceae are little influenced in the date of flowering by phenological factors and it is therefore probable that grasses, etc., were more backward than the Orchids, which were consequently more than usually conspicuous. We found that the Irish Marsh Orchids were remarkably conspicuous and could easily be seen in meadows adjoining the road by a passenger in a motor car travelling at considerable speed. The colonies observed and set out in the Table represent a very high proportion of those visible from the roads followed at that time of this particular year.

NARRATIVE.

WEST OF IRELAND.

A Table of Observations is appended, setting forth the details of the localities in which Marsh Orchids were observed and some of the principal characteristics of the plants examined in each locality. It will be seen that Marsh Orchids were observed in 32 distinct localities, but in some of those cases, where Marsh Orchids were observed but not collected, the word " locality " is used loosely and in such " localities " several distinct colonies were seen in one neighbourhood, see, for instance, under " Cloghane district." Twenty-two separate gatherings were made by myself and fifteen by Mr Simpson, in 21 localities. Covering such a great distance in such a short time, it was not possible for us to make such detailed examinations in the field as is desirable, but several gatherings were sent in a fresh state to the British Museum, where Mr Wilmott photographed them and made detailed notes upon the individual specimens. By tabulating the information obtained in

this manner, it has been possible to supplement the notes made and impressions formed in the field.

The first Orchids were encountered quite unexpectedly on May 17th. As we were leaving the nearest point to Three Castles Head, in the extreme S.W. of Cork, to which we had been able to get the car, a splash of purple was seen at the foot of the turf wall bounding the road. This proved to be a Marsh Orchid and subsequently 4 other specimens were found on damp heathy ground nearby. This was an exposed spot and the plants were in bud with the lowest flowers only open. Four of the plants had unspotted leaves and dotted labella, while one had a few spots on the leaves. At first glance these Orchids reminded me very much of *O. praetermissa*, but although we did not expect to see any *kerryensis* until we reached Kenmare or Dingle, we realised that this must be *kerryensis*, and attributed the spotted-leaved plant to hybridization with *O. elodes*, which was growing plentifully on the other side of the valley a few hundred yards away. On May 18th our starting point was Glengariff, and between that place and our destination, Waterville, we saw and collected from four separate colonies of Orchids, in addition to several colonies seen in the neighbourhood of Derrynane. In contrast to those seen the previous day, the plants seen on this day exhibited a great range of variation. Although plants were seen in each of the localities which agreed with the description of *kerryensis*, they formed a very small minority, and many plants were seen which only differed from one another in some having unspotted leaves and others leaves spotted in various manners and degrees, so that it did not appear that the leaf-spotting could be accounted for by hybridization. Moreover, only in one of these localities, Glenhazel, West of Kenmare, were any other Dactylorchids seen. Here *O. elodes* was present in good flower, and plants were also seen of another Orchid, impossible to determine, with heavily spotted leaves, which may have been *maculata*, *pardalina*, or a hybrid. At Cloonee Lough, where the range of variation was very great, and elsewhere, no other species was seen, although the terrain was favourable to *elodes* and that species would have been in flower, if present. The morning of May 19th was spent very largely in travelling from Waterville to Killarney, and the afternoon on the shores of the Lower Lake and at the gap of Dunloe. Only one colony was seen in the morning, near Bealalaw Bridge over the Caragh River, not far from Glencar; this showed the same range of variation as had been seen the day before; no Marsh Orchids were seen in the afternoon. On the next day a very large and luxuriant colony was found near Muckross, the only colony seen by us in the neighbourhood of Killarney. In this colony we found for the first time no specimens agreeing exactly with *kerryensis*. It had naturally been our expectation to see in Kerry plants agreeing with *kerryensis*, and we did not expect to see *occidentalis* until we reached Limerick, Clare and Galway. I think it was about now that we first began to suspect that *kerryensis* and *occidentalis*, if not absolutely identical, were probably only extreme forms of one very variable

species. In the Muckross colony were two specimens with flowers of the palest rose-pink.

The next colony seen on May 20th was near Castlemaine, and as will be seen from the Table this was very large and variable. In this locality, which was a marshy meadow, there were a considerable number of plants with pale labella with the side lobes very much reflexed. It was thought at the time that this might be due to hybridization with *O. latifolia*, but that species was not seen in the locality. One of the most remarkable and unexpected results of our excursion was that in all the localities visited we did not see a single specimen of *latifolia*, although that species is known to be generally distributed in Ireland. Mr Pugsley, for instance, tells me that *latifolia* was abundant in June 1934 about Cloghane, where we saw no sign of it. It may be that it was not yet in flower; if that is so, it is remarkable that this species should not be sufficiently forward in S.W. Ireland to be visible at a date, when one can find it in good flower in Hampshire and Dorset. To return to the reflexing of the side-lobes we subsequently found that the labellum of *occidentalis* commonly had very wide sinuses between the mid-lobe and the side-lobes, which tend to produce reflexing of the latter.

A colony near Inch showed the same range of variation, which we had now come to expect. On reaching Dingle that evening, we paid a visit to the type locality for *kerryensis*, thereby arousing considerable interest among the local population, especially the postmaster. This locality was somewhat different to any in which we had yet seen Marsh Orchids growing, being a very low-lying wet marshy meadow, much overgrown with *Iris Pseudacorus* and rushes. Very few Orchids were to be seen here and of them nearly all agreed with the description of *kerryensis*. One specimen had spotted leaves and a labellum untypical for *kerryensis* but of a type common in *occidentalis*. Another had spotted leaves and was in other respects *occidentalis*. *O. elodes* was growing in the same field, and there were also one or two plants, not yet in flower, of a Dactylorchid with blotched leaves similar to that previously seen at Glenhazel. It was, therefore, easy to see that, examining Marsh Orchids in this one locality only, Wilmott might well suppose that the type of the species was a plant with unspotted leaves and a pale dotted labellum, and that one spotted-leaved plant a hybrid with *elodes*. Between the type-locality for *kerryensis* and the town of Dingle, a few scattered Orchids were seen; these all appeared to be *occidentalis*.

On May 21st and 22nd Marsh Orchids were found to be very plentiful about Cloghane, on the north side of the Dingle peninsula. No specimens were found which agreed exactly with *kerryensis*. There were, however, especially in one locality on the road to Mullaghveale, a large number of very small few- and lax-flowered plants with markedly deltoid labella with projecting mid-lobes, similar to those noted at Castlemaine. Except for the fact that these were purple-flowered and *O. Francis-Drucei* has flowers with vivid crimson markings on a white

background, it would have been possible to pick out many specimens approximating to the description of *Francis-Drucei* and agreeing with that species in general configuration, habit and shape of labellum. In this locality also *elodes* was flowering abundantly and several specimens were confidently determined when fresh as hybrids.

During the afternoon of May 22nd we travelled from Cloghane to Ennis, passing en route through Newcastle West and Limerick. Marsh Orchids were seen in several localities about Castlegregory (one of the localities mentioned by Scully) and these were undoubtedly similar to those seen about Cloghane, and therefore *occidentalis*. Another colony was also examined between Castleisland and Abbeyfeale in a habitat different to any so far seen, a wet *Molinia*-moor. We were very anxious to find Marsh Orchids in the neighbourhood of Newcastle West, as this was one of the localities mentioned by Praeger for *majalis*. It was hereabouts that we originally expected to begin to get *occidentalis* and so we were anxious to see whether the Newcastle plants differed from those we had been seeing during the last few days. With great difficulty we succeeded in finding three plants; two had unspotted, and one spotted, leaves; all had labella characteristic of *occidentalis*. So the same kind of variation in leaf-marking existed here as we had found further south. A little beyond Limerick we found the most uniform colony yet seen. These Orchids had rather narrow leaves, unspotted or in a few cases only faintly spotted. The flowers were of a rather pale shade of purple reminding me very much of *praetermissa*. But several had labella characteristic of *occidentalis* and doubtless they are a form of that species.

May 23rd was spent in the Burren. Between Ennis and Ennistymon, about Inagh, Marsh Orchids were seen in abundance in every suitable meadow. The degree of variation in leaf-marking was very great and similar to that seen further south, as for example at Cloghane, Muckross or Glenhazel. There were no specimens agreeing entirely with *kerryensis*, in fact, only one such was seen north of Dingle. There were a few plants of a somewhat intermediate nature like those seen near Limerick, but all these Inagh plants clearly belonged to *occidentalis*, since exactly the same range was seen shortly afterwards when we reached Lisdoonvarna. Here, if we did not actually visit the type-locality for *occidentalis*, we must at least have been very close to it and there can be no doubt that the plants we examined were *occidentalis*. They were very luxuriant and exhibited every variation in leaf-marking as well as many plants with unspotted leaves. Three plants were seen with pale pink flowers as at Muckross. At Poulsallagh, another of Pugsley's localities for *occidentalis*, plants were again found with unspotted and with spotted leaves, and one specimen agreeing with *kerryensis*.

On May 24th, in contrast to the preceding days, only a single Marsh Orchid was seen, on the limestone shores of L. Skaghard, Co. Clare, and no Marsh Orchids were seen in the small portion of S.E. Galway, which we traversed. On May 25th, however, in Connemara, *occidentalis* was

seen in considerable numbers at Ballinafad, near Recess; a single specimen was seen at Roundstone and 2 or 3 more numerous colonies in the vicinity of Clifden. The greater part of the next day, May 26th, was spent in West Mayo. Marsh Orchids were seen plentifully about Newport, again a little west of Mallaranny (Marshall's locality for *Traunsteineri*), abundantly all along the eastern side of the Curraun peninsula between Mallaranny and Achill, and one small colony only actually on Achill Island. All these were without doubt *occidentalis*, but they were more uniform than the plants of Clare, many of them having narrow leaves, and showing a higher proportion of plants with spotted leaves, plants with unspotted leaves being almost entirely absent. The last colony of what the postmaster of Dingle called "Arrchid" seen by us in the west of Ireland was 1½ miles north-east of Beltra on the way from Newport to L. Conn.

WICKLOW.

O. majalis Reichb., sub-sp. *Traunsteinerioides* Pugsl. is known from only two localities in Co. Wicklow, Newcastle (the type-locality) and Ballyman Glen. Mr Brunker was unfortunately unable to accompany us and advised us not to visit the former locality alone on account of the dangerous nature of the marsh. This advice we took, but subsequently regretted very much that we had omitted to visit the type-locality. We visited the other locality in the afternoon of May 27th, and found a very uniform colony, not counted but estimated to contain 60-70 plants, clearly related to the Orchids which we had seen in the west, but also certainly distinct from them. Although this sub-species is described as having the labellum slightly 3-lobed with the mid-lobe often no longer than the side lobes, Pugsley points out (*loc. cit.*, 123-3) that some of the specimens from Ballyman Glen had the central lobe exceeding the side-lobes. We found this to be the case; many of the plants had labella of the deltoid (*Francis-Drucei*-like) form seen so often in *occidentalis* with the protruding mid-lobe sometimes even more pronounced. As compared with the western Orchids this form was found to be distinguishable by its slender habit with narrow linear-lanceolate leaves, contrasting with the squat habit and broad leaves of typical *occidentalis*. The leaves were uniformly marked with rather small spots (very few plants had transverse spots as shown in the plant illustrated in Pugsley's plate), in a few plants the spots were very few and faint, and in the case of one plant only there appeared to be no spots. The leaves of the Ballyman Glen plants were also less obtuse than is shown in Pugsley's plate. The plants were rather lax-flowered and the flowers of a distinctly brighter purple than *occidentalis* (the colour suggesting *Orchis mascula*), with the upper part of the stem and the bracts more or less suffused with purple also.

TABLE OF OBSERVATIONS.

Note.—n.c. = not collected. P.M.H.'s reference numbers above. N.D.S.'s reference numbers below (all commencing with 36).

Date.	Locality.	Vice-County.	Reference Numbers.	Frequency.	Notes.
17/5/36.	Near Three Castles Head.	W. Cork.	1630. 36.625-6.	Very scarce.	Only 5 specimens seen: 4 had unspotted leaves, wide labellum with dot pattern of *kerryensis*: 1 (36.625) had a few small spots at the base of the leaves, and narrower labellum with prominent mid-lobe.
18/5/36.	Rushy meadow 1½ miles east of Adrigole.	W. Cork.	1642. 36.637.	Plentiful.	Plants collected had unspotted and spotted leaves in equal proportions. Leaf markings included rings breaking into groups of dots, heavy blotches, few spots, bars and rings. Shape and marking of labellum variable. One plant 1642/3 had wide labellum and dot pattern of *kerryensis* with unspotted leaves. Two plants with unspotted leaves had *occidentalis* labellum, 1642/7 and 8. 1642/1 and 2 are *occidentalis*.
18/5/36.	Cloonee L. Meadows between road and N. shore of Lough.	S. Kerry.	1641. 36.636.	Very plentiful.	The majority of plants collected had unspotted leaves. One specimen 1641/4 agrees with *kerryensis*, 36.636a is similar but the dot pattern of the labellum is enclosed by a continuous line. Leaf markings included few dots, large ringed blotches, hollow blotches. *Occidentalis* labellum occurred with unspotted leaves.
18/5/36.	Meadow near Glenhazel, 5 miles west of Kenmare.	S. Kerry.	1639. 36.628.	Plentiful.	All kinds of variation in leaf markings. All spotted-leaved plants had *occidentalis* labella. Two plants with unspotted leaves, 1639/1a and b, had pale labella with dot pattern of *kerryensis* but approaching *occidentalis* in shape. Two others, 1639/2a and b, were similar but the labella were darker and the pattern consisted of dots and lines.

Date.	Locality.	Vice-County	Reference Numbers.	Frequency.	Notes.
18/5/36.	Meadow, Castle Cove.	S. Kerry.	1638.	Very sparing.	Two plants only collected, both with unspotted leaves. One (1638b) near *kerryensis*, cf. 1639 1a and b. The other (1638a) similar to 1639 2a and b.
18/5/36.	Derrynane.	S. Kerry.	n.c.	Frequent.	Observed in several meadows about Derrynane and in damp hollows on Abbey Island in considerable quantity.
19/5/36.	Meadow near left bank of Caragh R. near Bealalaw Bridge.	S. Kerry.	1643. 36.645.	Plentiful.	Considerable variation in marking of leaves: unspotted, dots, blotches and rings. Some pale flowers, but all with one possible exception had labellum shaped like *occidentalis*.
20/5/36.	Meadow near Muckross, S. of Killarney.	N. Kerry.	1670. 36.655.	Very plentiful.	A large and variable colony. Leaves unspotted, dots and blotches. Majority of plants had labella of *occidentalis*. A few with unspotted leaves had some dots among lip-pattern, but none agreed exactly with *kerryensis*. Two with unspotted leaves and labella of *occidentalis* shape had pale rose-pink flowers, cf. Ref. No. 1750, Lisdoonvarna.
20/5/36.	Marshy meadow ¼ mile west of Castlemaine.	N. Kerry.	1674. 36.656.	Abundant.	A very large and variable colony, with every kind of leaf-marking and labellum-shape. Tall plants up to 28 cm., small lax-flowered plants only 10 cm. One plant with unspotted leaves had broad labellum with strong line pattern. 1674/5 had leaves marked with dots and bars, labellum with loop and dot pattern. 1674B $\beta\beta$ had leaves peppered with very small dots, labellum pale and with dot pattern but *occidentalis* shape. 1674C was a

Date.	Locality.	Vice-County.	Reference Numbers.	Frequency.	Notes.
					very stout plant with broad leaves with numerous large dark spots, labellum broad and very serrated at the margins. Large blotches and ringed spots also occurred.
20/5/36.	3 miles E. of Inch.	S. Kerry (Dingle Penin.).	1675.	Plentiful.	This gathering was sent to Dr W. A. Sledge who dried it by the sulphurous acid method. This took out all the leaf-markings and left the flowers too vivid a colour, but Dr Sledge made notes and drawings. Leaves unspotted, thickly dotted, ring spotted or very heavily blotched. All labella of *occidentalis* shape, several with loop pattern.
20/5/36.	Marshy meadow at Milltown, near Dingle.	S. Kerry (Dingle Penin.).	1676. 36.653.	Scarce.	This gathering was from the type-locality for *O. kerryensis*. Few plants were seen: the majority had unspotted leaves and labella like *kerryensis*: one had unspotted leaves and labellum approaching *occidentalis*: one had spotted leaves and otherwise agreed with *occidentalis*.
20/5/36.	Meadows between Milltown and Dingle.	S. Kerry (Dingle Penin.).	n.c.	Scarce.	No plants were seen definitely agreeing with *kerryensis*: usual variation in leaf-markings.
21/5/36.	Meadows near Ballybrack, S.W. of Brandon Mountain.	S. Kerry (Dingle Penin.).	n.c.	Scarce.	Not examined.
21/5/36.	Meadow near Kilmore Lodge, Cloghane.	S. Kerry (Dingle Penin.).	1698. 36.660.	Abundant.	Nearly all *occidentalis*, a few of the plants with unspotted leaves had labella of intermediate shape, no *kerryensis*. Complete range of variation in leaf-markings.

Date.	Locality.	Vice-County.	Reference Numbers.	Frequency.	Notes.
22/5/36.	Marshy meadow by road between Cloghane and Mullaghveale.	S. Kerry (Dingle Penin.).	1699. 36.678.	Abundant.	Similar range of variation to last but there were a considerable number of small, few-flowered plants, cf. *O. Francis-Drucei* for habit and shape of labellum (36.678).
22/5/36.	Marshy meadow by road between Cloghane and Mullaghveale.	S. Kerry (Dingle Penin.).	1701. 36.669.	—	*O. elodes* was growing abundantly with the last gathering. There were also several plants with flowers more highly-coloured and with faintly-spotted leaves, resembling those of a Marsh Orchid in breadth and number, which were presumed to be hybrids between *elodes* and *occidentalis*.
22/5/36.	Cloghane district.	S. Kerry (Dingle Penin.).	n.c.	Very generally distributed in meadows.	Noted, but not collected, at the following places:—Mullaghveale (450 feet); 1 m. N. of Cloghane: several places about Cappagh and thence to the end of the road at Brandon; Boherboy, 1 m. S. of Cloghane and thence east to the Scorid River.
22/5/36.	Castlegregory district.	S. Kerry (Dingle Penin.).	n.c.	Probably frequent.	Seen, but not collected, at the following places:—Marshes west of lane at W. end of L. Gill; S. side of road to Tralee W. of Owennamallaght R.; N. of road in 2 or 3 places W. of Deelis Station.
22/5/36.	About 7 miles from Castle Island towards Abbeyfeale.	N. Kerry.	1681.	Plentiful.	One plant approaching *kerryensis*; leaves spotted and unspotted; majority approaching *occidentalis*.
22/5/36.	1 mile from Newcastle West towards Limerick.	Limerick.	1683.	Very scarce.	Only three plants seen; all resembled *occidentalis*; two had unspotted leaves.

Date.	Locality.	Vice-County.	Reference Numbers.	Frequency.	Notes.
22/5/36.	2½ miles N. of Limerick on road to Ennis.	Limerick (? Clare).	1702. 36.670.	Rather scarce.	A very uniform colony, with rather narrow unspotted or faintly spotted leaves. Of eleven plants collected, 8 had unspotted leaves. The flowers were of rather a pale colour reminiscent of *O. praetermissa*. Some of the labella were wide as in *kerryensis*, but the photo of 1702/3 and 5 in Herb. Mus. Brit. shows that this gathering should be placed under *occidentalis*.
23/5/36.	In meadows, near Inagh, between Ennis and Ennistymon.	Clare.	1749. 36.682.	Very abundant.	A large gathering was made which showed a very wide range of variation in leaf-marking. Nearly all the labella were of definite *occidentalis* character but a few resembled 1702. In some cases (e.g., 1749/10 and 4) the labella were marked with blotches and streaks rather than lines and dots
23/5/36.	Meadow ½ mile S.W. of Lisdoonvarna.	Clare.	1750. 36.683.	Very luxuriant and plentiful.	Very wide range of variation in leaf-marking. Labella nearly all *occidentalis*, but two plants with unspotted leaves had labella resembling 1702. Another plant (1750/3) with unspotted leaves had a labellum with strong loop pattern. Three plants with very pale rose pink flowers occurred here, cf. Muckross (1670), and see photo of 1750/5 in Herb. Mus. Brit.
23/5/36.	Roadside at Poulsallagh.	Clare.	1751. 36.713.	Scarce.	Leaves were unspotted or were marked with blotches. Labella marked with loops and dots. One specimen (36.713) had labellum exactly matching *kerryensis*.
24/5/36.	L. Skaghard.	Clare.	n.c.	Very scarce.	A single specimen only on the shore of the Lough.

Date.	Locality.	Vice-County.	Reference Numbers.	Frequency.	Notes.
25/5/36.	Wet meadow at Ballinafad near Recess.	West Galway.	1763.	Plentiful.	Usual range of variation.
25/5/36.	Cregduff L., Roundstone.	West Galway.	n.c.	Very scarce.	A single plant in heathy ground above the Lough.
25/5/36.	Clifden.	West Galway.	n.c.	—	Seen in 2 or 3 localities N. and S. of Clifden, not examined.
26/5/36.	2½ miles S. of Newport.	West Mayo.	1786.	Plentiful.	All plants in this locality had spotted leaves.
26/5/36.	1 mile W. of Mallaranny.	West Mayo.	1787. 36.751.	Fairly plentiful.	All plants in this locality had spotted leaves.
26/5/36.	Between Mallaranny and Achill.	West Mayo.	n.c.	Plentiful.	Not examined, but seen in many meadows all along the east side of the Curraun peninsula.
26/5/36.	Achill I.	West Mayo.	1788.	Scarce.	As Nos. 1786 and 1787. Only seen in one place on the Island, a meadow north of the road about ¾ mile from the bridge.
26/5/36.	About 1½ miles N.E. of Beltra.	West Mayo.	n.c.	—	Not examined.

DISCUSSION.

The immediate impressions formed by Mr Simpson and myself as the result of our work in the field may be worth recording. They were:—

(a) That all the Marsh Orchids we had seen were con-specific;
(b) That all the Marsh Orchids seen in the west of Ireland from West Cork to West Mayo were but variations of one very variable species; and
(c) That the Wicklow Orchid represented a variety (or race) of the same species, closely related to, but distinguishable from, it, and with a distinct geographical range.

The questions, which arise for decision, are:—

(i) Are all the Orchids referred to in our observations con-specific?
(ii) If they belong to one species, is that species one not previously known in Britain?
(iii) If the answer to ii is Yes, is that species *O. majalis* Reichb.?
(iv) Are *kerryensis*, *occidentalis* and *Traunsteinerioides* separable and what are their relationships to one another?
(v) Do any of the described British species of Marsh Orchid exist in Ireland?
(a) *latifolia*, (b) *pardalina*, (c) *praetermissa*, and (d) *purpurella*.

i. The answer to this question must vary according to the individual writer's standard of the species, but taken on the same standard as that by which *O. latifolia* and *O. praetermissa* are accounted species I have no hesitation in supposing that all the plants included in this survey belong to one species, albeit the range of variation is somewhat greater than in either of those two species. But it is to be noticed about this range of variation that almost wherever Marsh Orchids were observed the same range of variation occurred. Not only was the type of variation constant, the habit of all these Marsh Orchids and their time of flowering were also constant. The immediate impression from field observations was that they were all con-specific; I see no reason after studying dried material, photographs and drawings to alter this opinion.

ii. Whatever the answer to the last question, there can be no doubt about the answer to this. These plants belong to a species not previously recognised as British. Though there are resemblances to *O. purpurella*, to which reference will be made later, these Irish plants which I have described are certainly not that species; with even more certainty they are not either *O. latifolia*, *O. pardalina*, *O. praetermissa*, or any form of *O. maculata*. No British species has a labellum like that which is typical of these plants, nor has such a range of variation of leaf-marking. The date of flowering is earlier than that of any British species, except *O. latifolia* in S. England, but be it noted that this exception does not appear to apply to Ireland, since we failed to see any *latifolia* in flower.

iii. Both *occidentalis* and *Traunsteinerioides* have been described by Pugsley as sub-species of *O. majalis* Reichb., while Wilmott admits the

close relationship of his *kerryensis* to the same species. It is remarkable that the dominant Marsh Orchid in Ireland should be a species not yet recognised in Britain and a species moreover which upon the Continent appears to be more common in Germany and the Netherlands than in Western France and Spain, but I believe that the kinship of these plants has been correctly stated to be with *majalis*. The habit is identical; I am informed by Mr P. Vermeulen that the remarkable range of leaf-marking observed in the Irish plants occurs also in Dutch *majalis*; it appears also that the variation in shape of the labellum is very similar. As to colour, Vermeulen, *Journ. Bot.*, *72*, 97 (1934), writes:—"The colour of the flower is a dark purple, such as *O. purpurella* Stephenson." The Irish plants certainly agree in colour with *purpurella*, but I should describe it as a rich reddish-purple rather than a dark purple. In this connection it is necessary to qualify my previous suggestion that *majalis* is a species not yet recognised in Britain. In its typical form it is not so recognised, but I think it can now be accepted as certain that both *O. purpurella* Steph. and Godfery's *O. latifolia*, var. *eborensis*, are related to *majalis*, and probably *O. Francis-Drucei* Wilmott also. But the latter does not seem to have quite the same early flowering habit, though it must be remembered that its only recorded locality is in high latitudes ("West Ross; slopes above Loch Maree, 23rd June 1935."). The close relationship between these three plants has already been recognised by Pugsley (*loc. cit.*, (1935)), who placed *purpurella* in his Section *Majales*. And I may perhaps be permitted to point out that in writing an account of Godfery's well-known Monograph (*B.E.C. 1932 Rep.* (1933), 79) I hinted at a relationship between *eborensis*, *purpurella* and *majalis* in the following words: "It is perhaps significant that though *eborensis* is described as a variety of *latifolia* it is printed not after that species but following *purpurella*. It may further be pointed out that Dutch botanists recognise a form of *latifolia—majalis*, which is characterised among other things by dwarf habit and early flowering; moreover, Dutch botanists have confounded this plant with *purpurella*." The clearer perception of the kinship of *purpurella* with *majalis* (through *occidentalis*) enables one to see the significance of *purpurella* having spotted or unspotted leaves, and it also enables one to discard var. *pulchella*, which I have come to consider cannot be maintained as distinct.

To return to the question of shape of the labellum, Figs. i-v show the outline of 5 labella of *majalis*, after Vermeulen, *loc. cit.*, 98. Figs. xiv-xxix, after drawings by Mr Simpson, and Figs. xxxi-xxxv from my own specimens, show the outlines of the labella of Irish specimens. These show at once the range of variation and similarity in many instances with labella of Dutch *majalis*. In Dr Stephenson's Herbarium separately dried labella of *majalis* from French localities (Figs. vi-xiii) show similar resemblances.

iv. This question is less easy to answer and one that cannot in my opinion be finally answered in the present state of our knowledge. It

is desirable that further observations should be made in those localities examined by us, in other seasons and at other times of the year, and in other localities. I have given reasons above for supposing that *Traunsteinerioides* is at least distinguishable from the Western Irish Orchids as a variety or form. With regard to the relative positions of *kerryensis* and *occidentalis*, I confess that my ideas are still somewhat confused. While my general impression was in the field, and is now, after further reflection, that all the plants seen in Western Ireland are but variants of one variable species, I must admit that in shape, colour and pattern of labellum, but not in habit, *kerryensis* is more distinct from typical *occidentalis* than is *Traunsteinerioides*. But there is this difficulty to overcome, if one is to believe that *kerryensis* is separable from *occidentalis*, that never once did we see a uniform colony of *kerryensis*. At Three Castles Head and in the type locality at Dingle, among the very small numbers of orchids seen plants conforming to *kerryensis* were in the majority. Elsewhere they occurred as isolated individuals among large numbers of *occidentalis* or were altogether absent. For those who would wish to maintain *kerryensis* as distinct from *occidentalis*, there may be some significance in the following facts brought out by our observations:—The localities where *kerryensis*-like individuals were seen are more or less confined to W. Cork, S. Kerry and the Dingle Peninsula, which might indicate a separate geographical range; proceeding north, as the number of *kerryensis*-like individuals decreases, so the proportion of plants with unspotted leaves decreases, until in W. Mayo localities were found where all plants noted had spotted leaves. On the other hand I consider that my Castlemaine specimen [Ref. No. 1674 B $\beta\beta$] with a pale labellum with dot pattern but of *occidentalis* shape and with spotted leaves, and Mr Simpson's Poulsallagh specimen [Ref. No. 36.713] with labellum agreeing exactly with *kerryensis*, though growing with undoubted *occidentalis* in *occidentalis* territory, are very strong arguments in favour of the theory that all the Western Irish orchids are variants in one range of variation.

To return to *Traunsteinerioides* I do not feel that one is justified in ranking this as a sub-species of equal value with *occidentalis*. I am of opinion that all the Irish Marsh Orchids alluded to should come under the name *majalis*, sub-sp. *occidentalis*, with *Traunsteinerioides* as a variety or race with an apparently distinct geographical range. The name *kerryensis* might possibly also be admitted as a sub-variety or form of the typical variety of *occidentalis*, merely to mark one end of the range of variation. But I must repeat that this is only a provisional opinion, for which I think it is possible to show a case at the present time, but that much more research is necessary before it can be stated as a fact.

I suggest that it is desirable that the description of *occidentalis* should be emended to embrace the very wide range of variation both in the flowers and in the marking of the leaves. In the case of the leaves the following are only some of the variations which may be found:—No spots, a few small dots at the base of the leaf, dots at the base and

apex—none in the middle, leaves peppered all over with dots, a few largish distant spots, ringed spots, large spots breaking up to form circles of dots, transverse bars, very heavy blotches and so on in endless variety. The illustrations (plates) show both the habit of the plant as well as some idea of the variation in the leaves and flowers. The occurrence of rose-pink specimens at Muckross and Lisdoonvarna is of interest in view of Pugsley's reference to specimens of *Traunsteinerioides* of this colour at Ballyman Glen.*

v. This question is another that cannot be answered finally.

(a) As regards *O. latifolia*, there is no doubt that this species occurs in Ireland and there is no reason to suppose that Praeger is wrong in stating that it is generally distributed and occurs in every Irish vice-county. Mr Brunker says that this is the prevalent species in Cos. Dublin and Wicklow. It is most remarkable that Mr Simpson and I saw no *latifolia* at all.

(b) There is at present no evidence for the occurrence of *pardalina* in Ireland. The presence of isolated specimens with leaves reminiscent of this species at Glenhazel and Dingle has been noted, but there is as yet no evidence as to what these plants were.

(c) There can be no doubt that the recording of *praetermissa* in *Comital Flora* from 5 Irish vice-counties is based largely upon the specimens in Herb. Druce, in which there are some interesting gatherings, and also that Druce supposed that Irish *praetermissa* principally took the form of his var. *pulchella*. There are 2 plants distributed through the Watson B.E.C. named *O. incarnata* L., Westport, W. Mayo, 22/6/1899, E. S. Marshall, which have been marked by Druce "praetermissa" in pencil. [W. Mayo is, however, not one of the 5 vice-counties for which *praetermissa* is given in *Comital Flora*.] One of these was correctly identified by Marshall and is *O. latifolia* L. (*O. incarnata* auct. *non* L.). The other is a different plant and is strongly suggestive of a hybrid, *latifolia* × *occidentalis*. A gathering from Woodford, Co. Galway, June 1909, Druce, named *O. latifolia* L., *teste* Rolfe, is undoubtedly *occidentalis*. The notes on this sheet are illuminating: by Druce "praet. praet. × mac."; by E.F.L(inton) "O. latifolia L."; by T. S(tephenson) "pulch. × ericetorum." These notes are not dated but clearly it was at one time thought that these plants were *praetermissa*, *praetermissa*, var. *pulchella*, or hybrids of one of these with *elodes*. There is also a gathering from Blackhead, Co. Clare, Druce, June 1930 or 1931. These are named *maculata* × *praetermissa* with the note "? *purpurella*—leaves spotted." At least two of these plants show the unmistakable heavy spots of *occidentalis* on their leaves. There can be no doubt that all Druce's Irish records of *praetermissa* are based on *occidentalis*, and there is no other evidence for the occurrence of *praetermissa* in Ireland.

*Rose-coloured flowers also occur in *O. purpurella* Steph., var. *maculosa* Steph. (see p. 356) but in that case the shade of pink is considerably darker than the very pale shade seen at Muckross and Lisdoonvarna.

(d) The position with regard to *purpurella* is far more obscure. It has already been pointed out that *occidentalis* and *purpurella* are closely related. I think it may ultimately be found that they are parallel and equivalent sub-species of *majalis*. To complicate matters further the existence of forms intermediate between *occidentalis* and *purpurella* in West Sutherland, Orkney and Shetland was pointed out by Pugsley (*loc. cit.*, 584, 1935) and such have since been found in other parts of Scotland. Mr W. Handyside, of Edinburgh, has sent me this year and last fresh specimens of an orchid which grows in large numbers, quite uniform, at Burntisland, in Fifeshire. This is distinguished from *purpurella* by its wide 3-lobed labellum and by having the leaves peppered all over with small spots, as occurs in many specimens of *occidentalis*, and is described elsewhere in this Report (p. 355) by Dr Stephenson as a new variety, *maculosa*, of *purpurella*. In 1935 I expressed the tentative opinion that it was intermediate in character between *purpurella* and *occidentalis*. I have since seen *occidentalis* in the flesh and think that there is no cause to revise my first opinion. Other plants of an intermediate nature have been collected by Miss E. S. Todd in Caithness and Sutherlandshire, and yet others by Miss M. S. Campbell in the Outer Hebrides, while in her collection there are some plants (see especially her Ref. No. 36613 B from N. Uist) which appear to be *occidentalis* or some very closely-related *majalis*-form.

Although there is evidence in support of the occurrence of *purpurella* in Ireland, Praeger's note on the Irish distribution of *purpurella*, " ? Frequent," does not seem to be justified at the present time, and it is probable that the vice-county records given by him are largely based on records by Druce of *praetermissa*, var. *pulchella*, now known as *purpurella*, var. *pulchella*. As has been shown above, it is probable that in most of these cases the plant in question was *occidentalis*, but at least one such record was correct, as is shown by two poor specimens in Herb. Druce, from Toome Bridge, Co. Antrim, Druce, 1909, which are annotated " pulchella T.S." These are no doubt the basis of Praeger's Antrim record of *purpurella*, and although they are very poor material, I consider from their habit that they are not *occidentalis* and are correctly named.

Other tangible evidence in support of the occurrence of *purpurella* in Ireland is that Dr W. A. Sledge tells me that he saw large quantities of that species in flower about Kylemore, Co. Galway, in July 1935. Dr Sledge knows *purpurella* and the other British species intimately and I think it highly improbable that, if he had seen the end of the crop of *occidentalis*, he would not have observed the great variability of that sub-species and the characters by which it differs from *purpurella*. Moreover, the time of flowering was correct for *purpurella* but too late, as far as we know, for *occidentalis*.† Further, Pugsley, *loc. cit.*,

†Dr Sledge points out further that if the plants seen by him were the end of the crop of the early-flowering *occidentalis*, he would have seen many fruiting specimens, which he did not. He also reports that he saw several hybrids, *elodes* × *purpurella*.

594-5, refers to specimens in Herb. Mus. Brit. from Cos. Donegal, Tipperary, Cork, and Waterford, identified by him as *purpurella*. He also tells me, *in litt.*, that he received specimens of *purpurella* collected by Mr Chase at Kinnegar, near Belfast, 2nd July 1934. The Irish distribution of *purpurella* is therefore at present very imperfectly known.

HABITAT.

O. majalis, sub-sp. *occidentalis*, is principally a plant of pastures and hay meadows, generally moist, sometimes quite wet and boggy. The locality at Castlemaine was a marshy meadow with very coarse vegetation not unlike an English water-meadow. In many cases, as at Adrigole, the plant was associated with rushes or with *Iris Pseudacorus* as at Dingle in the type-locality for *kerryensis*.

In the matter of soil the plant appears to be to some extent indifferent. In the great majority of cases it was seen growing on an acid soil in association with *O. elodes*, or where that species would be expected, about Ennistymon on the shales, at Lisdoonvarna on the Old Red Sandstone and at Poulsallagh and L. Skaghard on limestone. In the latter cases, however, it is to be supposed that the orchid was actually growing in a layer of peaty detritus overlying the limestone, since at Poulsallagh a stunted form of *Schoenus nigricans* was seen growing nearby, and at L. Skaghard the locality was at the edge of a turlough, or depression in the limestone filled with water in the winter but drying up in the summer. *Viola canina* was associated with the plant in this locality, whence *V. stagnina* is also recorded but was not seen on this occasion.

It must be emphasised that this is a lowland plant and was seen by us nowhere above 500 feet above the sea. In fact, Mullaghveale, near Cloghane, shown on the 1 in. = 1 mile map as between 450 and 500 feet was the highest point at which it was seen.

It is noteworthy that we traversed seven out of the nine divisions into which Scully divides the County of Kerry, and we saw the plant in six out of these seven divisions, the one division in which we did not see it being Division IV, which contains Macgillycuddy's Reeks and is practically all high ground.

DISTRIBUTION.

The distribution of *O. majalis*, sub-species *occidentalis*, in Ireland is as far as is at present known:—

H. 1-3, 8, 9, 15, 16, 20, 27.
S. Kerry !, N. Kerry !, W. Cork !, Limerick !, Clare !, S.E. Galway (Pugsley), W. Galway !, Wicklow ! (*Traunsteinerioides*), W. Mayo !.

SUMMARY.

i. There is a Marsh Orchid widely distributed in Ireland distinct from any other recognised as British prior to the publication of Pugsley's paper in 1935.

ii. This is *O. majalis* Reichb., sub-sp. *occidentalis* Pugsl., which is so far known from eight vice-counties in Western Ireland from W. Cork to W. Mayo.

iii. An allied plant, described as *O. majalis* Reichb., sub-sp. *Traunsteinerioides* Pugsl., occurs in S.E. Ireland where it is so far only known with certainty from Co. Wicklow.

iv. The position of *O. kerryensis* Wilmott cannot yet be exactly defined, but it appears to mark one extreme limit of the range of variation of *occidentalis*.

v. *O. majalis*, sub-sp. *occidentalis*, is related to *O. purpurella* Steph., which may itself be regarded as a sub-species of *O. majalis* Reichb.

vi. Intermediate forms linking *occidentalis* and *purpurella* have been found in Scotland and the Hebrides.

vi. *O. purpurella* also occurs in Ireland but the information available as to its distribution is very incomplete.

viii. There is at present no evidence for the occurrence of *O. praetermissa* in Ireland.

I have to acknowledge with gratitude the assistance of many friends in the preparation of this paper. Reference has already been made to the help readily given by Mr A. J. Wilmott, Mr H. W. Pugsley and Mr J. P. Brunker. The two former have given further valuable assistance in the shape of criticism, and the value of Mr Wilmott's photographs is self-evident. I have also received much assistance from Dr Stephenson, Mr P. Vermeulen, Dr W. A. Sledge and Mr W. Handyside, whilst thanks are also due to the staff of the British Museum Herbarium for the care with which they preserved specimens. Last, but not least, I am indebted to Mr N. Douglas Simpson for the loan of his specimens and drawings, for many valuable suggestions, and above all, for his companionship on the expedition which made this paper possible.

EXPLANATION OF FIGURES AND PLATES.

Figs. i-v.—Labella of Dutch *majalis*, after Vermeulen. ×1.

Figs. vi-xiii.—Labella of French *majalis*, in Herb. Stephenson. ×1.

Figs. xiv-xxix.—Labella of *majalis*, sub-sp. *occidentalis*, in Herb. Simpson. ×3.

xiv.=Ref. No. 36.626, cf. *kerryensis*, Three Castles Head.

xx.=Ref. No. 36.656d, from a small, lax- and few-flowered plant, Castlemaine.

xxi.=Ref. No. 36.656h, cf. *kerryensis* for shape of labellum, Castlemaine.

xxii.=Ref. No. 36.653, from type-locality for *kerryensis*.

xxiii.=Ref. No. 36.682b, cf. *purpurella* for shape of labellum, from the very large and variable colony of *occidentalis* near Inagh.

xxiv and xxv.=Ref. No. 36.683c and d, extreme shapes of labella, Lisdoonvarna.

xxvi.=Ref. No. 36.713, exactly matching *kerryensis* in shape of labellum, cf. Fig. xxx, Poulsallagh.

Fig. xxx.—Labellum of *kerryensis* after Wilmott. ×2.

Figs. xxxi-xxxv.—Labella of *majalis*, sub-sp. *occidentalis* in Herb. Hall. ×1.

xxxi.=Ref. No. 1642/3, cf. *kerryensis*. Adrigole.

xxxiv and xxxv.=Ref. No. 1750/8 and 1750/2, Lisdoonvarna.

Fig. xxxvi.—Labellum of *Traunsteinerioides* after Pugsley. ×3/2.

Figs. xxxvii-xli.—Labella of *Traunsteinerioides* in Herb. Hall. ×1.
xli.=Profile of xl. Reflexing of the side-lobes frequently produces a similar profile in *occidentalis*, cf. Plate IV J.

PLATES. All × 1. The lines on the prints are 2 cm. apart.

Plates II and III illustrate 8 plants from Glenhazel, W. of Kenmare, Ref. No. 1639, and show some of the variation in leaf-marking, shape and pattern of the labellum to be found in one not very large colony.

Plate II. A.=Ref. No. 1639/1a, cf. *kerryensis*.
B.=Ref. No. 1639/1b, leaves unspotted, pattern of labellum as in *kerryensis* but shape of *occidentalis* (see lowest flower in particular).
C and D.=Ref. No. 1639/2a and b, both with unspotted leaves.

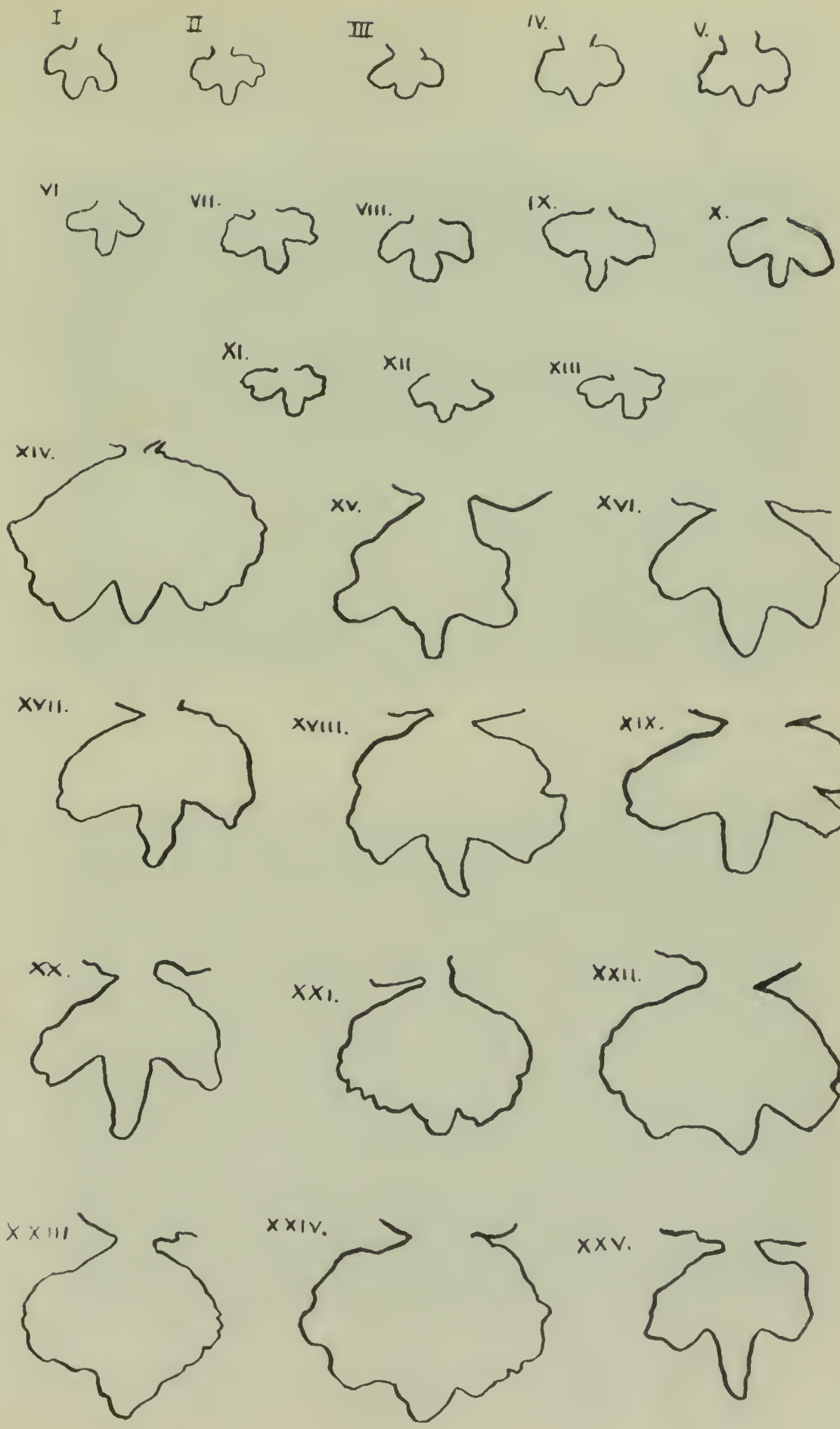
Plate III. E, F, G and H.=Ref. No. 1639/4a and b, 1639/7a and b, all *occidentalis*.

Plate IV. I.=Ref. No. 1641/1, Cloonee, leaves unspotted but labellum of *occidentalis*, not *kerryensis*.
J and K.=Ref. No. 1674/5 and 6.

Plate V. L. and M.=Ref. No. 1674/7 and C.
J, K, L and M illustrate the very wide range of variation seen in the colony at Castlemaine. The form of labellum of J is very typical of *occidentalis*. Note that in M the lip-pattern is mainly of dots although the leaves are so heavily spotted.

Plate VI. N.=Ref. No. 1676A, *kerryensis* from the type locality.
O.=Ref. No. 1676C, *occidentalis* from the type-locality for *kerryensis*.

Plate VII. P and Q.=Ref. No. 1750/8 and 10, 2 plants with very heavily marked leaves from Lisdoonvarna, at or near the type-locality for *occidentalis*. Equally heavy markings were seen in many other localities.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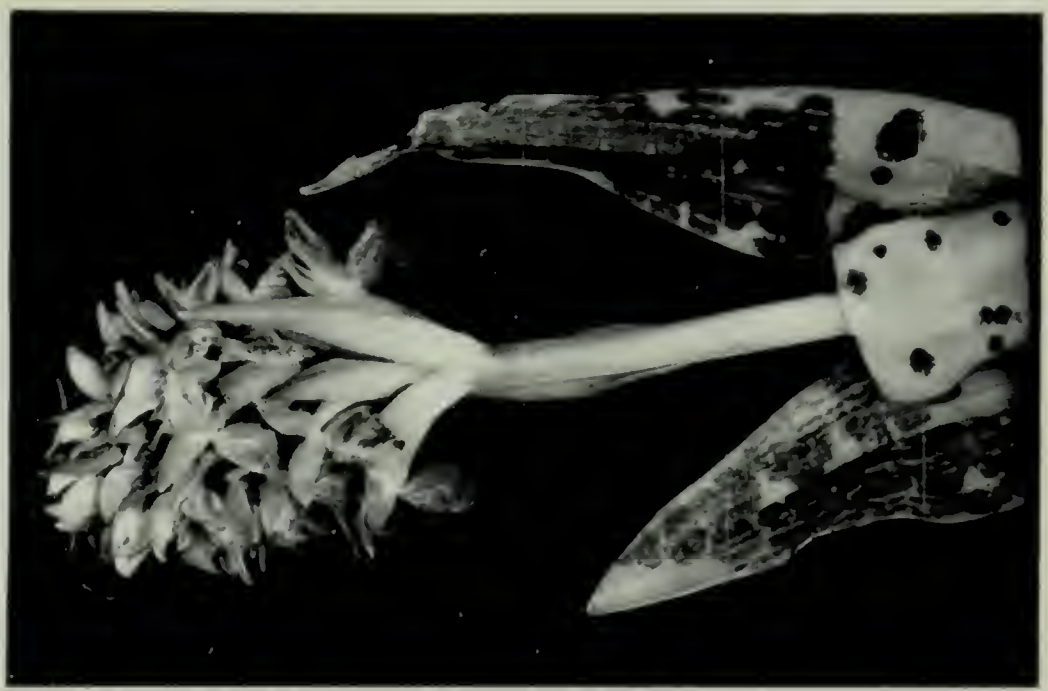

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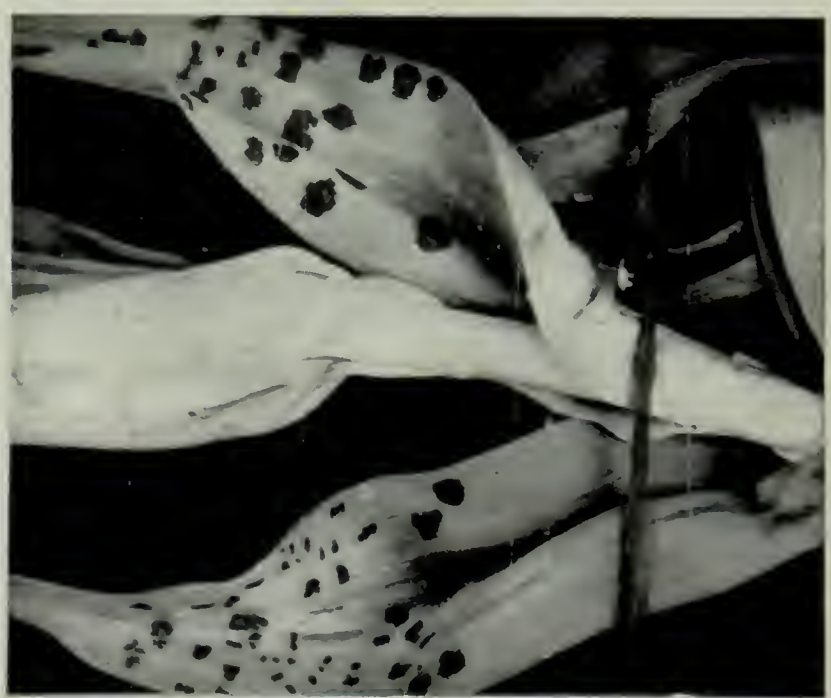

P.

TWO VARIETIES OF ORCHIS PURPURELLA Stephenson.

T. Stephenson.

Since 1930 Mr W. Handyside, of Edinburgh, has been studying two interesting colonies of forms of *O. purpurella* growing near Burntisland, Fife, on the site of long disused shale-oil works. The site has a Southern aspect, and is sheltered from the North by hills and refuse-mounds. It is close to sea-level, about 500 yards from the Firth of Forth.

We have here a site comparatively recently occupied, with fairly rich soil, conditions under which it is not surprising to find variations in a species belonging to what is the most changeable and probably the most recent group of Dactylorchids.

The larger colony consists of rather over 400 plants, and of these about 10% are typical *O. purpurella*. In 1935 five plants of *O. Fuchsii* were found, none in 1936. There are a few plants which might be hybrids between *O. Fuchsii* and *O. purpurella*. The rest are of the form described below.

ORCHIS PURPURELLA Steph.
(a) Habit of type-species.
(b) Habit of var. *crassifolia* Steph.
Actual height: (a) 22 cm., (b) 23 cm.

Orchis purpurella Steph., var. **maculosa**, var. nov.

Planta habitu speciei typicae. *Caulis* saepe solidus. *Folia* plerumque crebris maculis parvis induta (nonnulla immaculata).

Flores colore purpureo-rubente vel roseo. *Labella* signis conspicuis colore comparibus inscripta.

The habit of the plants is that of the typical species, but the leaves, instead of having very few spots, are usually spotted all over with very small spots. In the typical species the few spots are found either at the base or the tip of the leaves. Where they are more evenly distributed, they are still very few. In the variety, a large proportion of the stems are solid. Some of the flowers are of the dark crimson-purple of the typical species, but many are rose-coloured. The lip-markings, as of the typical species, consist of small, thick, crescent-like curves, similarly arranged, whose colour varies with that of the lip, that is, being of the same colour, only deeper in tone.

The presence of solid stem and rosy flowers might suggest that these plants are only hybrids with *O. Fuchsii*, but this hybrid has paler flowers with narrower and more continuous line-patterns, more prominent centre-lobe, and usually larger and more irregular spots on the leaves. The hybrid is also larger as a rule. In fact, a few of these hybrids are actually on the spot, and are quite different from the principal group of plants.

The whole colony does not look to me like a case of fertile hybrids swamping the parents, but more like that of a set of plants drifting away from the species in the direction of a form with a solid stem, rosy flowers, and thickly-spotted leaves. Some genes, latent or newly evolved, have come into play in the new situation, perhaps because of different nutrient material and other environmental changes.

The smaller colony consists of about 200 plants growing in black mud beside a pool. The leaves are very large and thick, and the flower-spikes superb. The flowers have the form and colour of the typical species, but very rich, and larger than the average, the lips measuring 11 mm. in width by 8 mm. in length, in most cases, as against 8 mm. by 6 mm., the average for the typical species. The leaves are unspotted. The measures of the leaves of one plant are (in centimetres) 7 × 2.5, 12 × 4, 12 × 4, 13 × 3.75, 13 × 2.8, 11 × 2.4, and 9 × 1.4, the measures of an ordinary specimen of the typical species being 2.5 × 1, 7 × 2.2, 7 × 2, and 6 × 1.6. Mr Handyside has measured a leaf 13 cm. × 4.5 cm. The leaves are not only massive, but more numerous than in the typical species, 8 or 9, as against 6. The height of the plants is about 22-25 cm.

Orchis purpurella Steph., var. **crassifolia,** var. nov.

Planta quam species typica valde robustior. *Folia* crassa, multo majora quam speciei typicae, plerisque juxta caulis basin insertis.

In the typical species, the leaves are fairly evenly spaced up the stem. In this variety, they appear to be springing from near the base, and the general appearance is very different from that of the type.

Taking into consideration both the outstanding size and the considerable number of the plants, all wonderfully alike, I think we have here something more than an accidental result of hypertrophy. This is possibly a giant-form with double the usual number of chromosomes. Col. Godfery, in his *Monograph of British Orchidaceae*, p. 4, mentions *Orchis Traunsteineri*, var. *gigas*, as a case of diploidy (20 chromosomes instead of 10). This probably applies also to the immense form of *O. palustris*, which grows in Algeria, named by me as var. *robusta*. A similar case may be that of *Orchis papilionacea*, var. *grandiflora*, which, at any rate in North Africa, is twice the size, in all its parts, of the type. Such varieties are well known in other plant-orders.

Mr P. M. Hall first introduced me to the Burntisland orchids. He has kindly read this paper, and made valuable suggestions. It may also be said that Mr Handyside has rendered excellent service in bringing into notice these interesting colonies of orchids.

A type-specimen of each variety has been deposited at the Department of Botany, British Museum, South Kensington.

CAREX PSEUDO-PARADOXA S. Gibson.

W. A. Sledge.

The object of this paper is to show that Gibson's *Carex pseudo-paradoxa* is a variety of *C. diandra*; that it is synonymous with, and antedated by, Koch's variety *major* of that species and that the illustration in *English Botany* (ed. 3, t. 1620, as *Ehrhartiana*) does not represent Koch's plant.

The sedge described by Gibson as a species has since been ranked by different authors as a variety of *C. diandra*, *C. paradoxa* and *C. paniculata*. The confusion respecting its status is reflected in its treatment in the current editions of the *London Catalogue* and Druce's *List of British Plants*. In the former it is included under *C. paniculata*, whilst in the latter it and *major* appear as different varieties of *C. diandra*. This confusion is partly due to Gibson's faulty description and partly to the fact that authentic material is not available for study in the national herbaria. Gibson's collection is preserved in the Belle Vue Museum, Halifax, and I have to thank the Keeper, Mr T. L. Gwatkin, for the loan of all the type material of this sedge for examination.

The first notice of the plant was in a short note by Gibson (*Phyt.*, i, 366, 1842) on "Additional Manchester Plants" where he refers to it as a variety of *C. teretiuscula* (*diandra*) "with its fruit (i.e. nut) agreeing with Leighton's figure of the fruit (nut) of *C. paniculata*." In the following year the plant was described as a species (*op. cit.*, i, 778, 1843). "*C. pseudo-paradoxa*. Spikes panicled, branches approximate; perigynium ovate, gibbous, acuminated into a serrulate bidentate beak, more or less plano-convex, with seven nerves on the convex side (three very slender in the middle, and two strong ones on each side of them), the outer nerves, or those nearest the margins, being very short; nut rhomboidal narrowing from below the middle; style enlarged at the base, stem three angled, angles rough on the upper part; leaves narrow, rough on their edges. This plant differs from *C. teretiuscula* in having its spikes more distinctly panicled, in its nut being narrowed upwards from below the middle and in its style being thickened at the base." The new species was described from material sent as *C. teretiuscula* from "near Manchester" (probably from the locality known as Chorlton Fields) in August 1842, by G. Crozier; and another gathering sent as *C. paradoxa*, by J. Sidebotham, in June 1843, from Seaman's Moss Pits, Cheshire. Gibson also records the same plant as growing plentifully by the sides of Malham Tarn, near Settle, and there are specimens in his collection gathered in 1840 which match the Manchester and Cheshire plants.

Several botanists contributed to the discussion which followed the publication of the new species. Dr J. B. Wood and W. Wilson, of Manchester, who were well acquainted with the plant at Seaman's

CAREX PSEUDO-PARADOXA S. Gibs.

Moss Pits, were unable to see in it "anything else than a modified form of *C. teretiuscula*." In this opinion they were confirmed by Dr Boott to whom Wood sent specimens. As the controversy developed on distinctly bitter and personal lines the editor of the *Phytologist* was appealed to for his opinion. In an impartial reply Luxford gave a careful account of the plants submitted to him by Sidebotham and Wood, and a detailed comparison with all three allied species led him to conclude that the position assigned to *pseudo-paradoxa* as a variety of *C. teretiuscula* in the recently published *London Catalogue* "is doubtless its true place, if allowed to retain an existence separate from the normal form; for as a distinct species it certainly appears to have no claim to a station in our Flora."

Though his opponents were unanimous in referring the plant to a form of *C. teretiuscula*, Gibson vigorously defended his new species in a further article (*op. cit.*, 1038-1044) and contrasted it with its allies as follows:—"My *Carex pseudo-paradoxa* differs from *C. teretiuscula* (when mature) in its nut being narrowed from below the middle and in the perigynium being broader and truncate at the base; it also differs from that plant in its stem having three *acute* angles with their interstices *flat*. From *C. paniculata* it differs in its perigynium being differently ribbed and less distinctly bifid at the point, and in having narrower leaves. From *C. paradoxa* it will be found to differ in its perigynia being less distinctly ribbed on its inner side and also in the form of its stem. And from all the other three it differs in its mode of inflorescence." But in spite of his reiterated claims for its distinctness, Gibson still found no supporter for his new species. Babington, to whom Wood had also sent specimens, expressed his opinion of the plant in his treatment of it (*Man.*, ed. 2, 357. 1847, and subsequent editions) as synonymous with *C. teretiuscula* Good., var. *Ehrhartiana* Hoppe. The same position was given to it by Hooker (*Stud. Fl.*, 408, 1870, and subsequent editions), and Syme (*Eng. Bot.*, ed. 3, 88, 1870). The variety has been taken up by several continental authors who have differed more widely as to its position. Richter (*Pl. Eur.*, i, 149, 1890) makes it a variety of *C. paradoxa*, whilst Ascherson and Graebner (*Synops. Mitteleurop. Flora*, ii, 2, 46, 1902) treat it as a variety of *C. paniculata*.

In 1912 C. E. Salmon (*Journ. Bot.*, 14, 1916) collected a sedge at Restennet, Forfar, which he concluded was Gibson's *C. pseudo-paradoxa*, the correct position of which was under *C. paniculata* rather than *C. diandra*. In reviewing the original controversy over Gibson's plants he points to the records in De Tabley's *Flora of Cheshire* for both *C. teretiuscula*, var. *Ehrhartiana* and *C. paniculata* at Seaman's Moss Pits and suggests that Gibson's critics had been discussing the former plant whilst Gibson had described a form of the latter. Salmon's suggestion, however, is quite untenable as there is every evidence from Wood's comments that he knew the disputed plant in this locality far better than Gibson himself. Indeed there is no evidence to show that Gibson ever collected at Seaman's Moss Pits. All the specimens in his herbarium

from this locality were received from local botanists, including Wood. Moreover, one of Wood's gatherings of this sedge was agreed to as *C. diandra* by Salmon when it was sent to him by S. H. Bickham (*Journ. Bot.*, 113, 1917). I have not seen the Restennet plants but other specimens sent to the Watson Exchange Club in 1921 by J. E. Little as *C. paniculata*, var. *pseudo-paradoxa*, and agreed to by Salmon, have the fruits of typical *C. paniculata* and are in my opinion a form of that species with reduced panicle. As Kükenthal (*B.E.C. 1916 Rep.*, 430, 1917) also determined a gathering of Druce's from Restennet as *C. paniculata*, var. *simplicior* Anders., there can be little doubt that Salmon's plant was the same, and that his conclusions respecting the relationship of Gibson's plant were quite unjustifiable.

An examination of Gibson's own specimens of *C. pseudo-paradoxa* leaves no doubt as to the reason why contemporary botanists were unable to confirm the characters attributed by its author to the fruits of this plant. The shape of the nut, narrowed upwards from below the middle "as in *C. paniculata*," was stressed as separating it from *C. diandra*, which has a turbinate nut; whilst the shape of the style base was said to differ in the two plants. The accompanying photographs show ripe nuts of *C. diandra* (upper row), *C. pseudo-paradoxa* (middle row), and *C. paniculata* (lower row). No wonder no support could be found for the reputed differences! My examination leads to conclusions which are wholly in agreement with Luxford's verdict (*op. cit.*, 923) that:—"The perigynium is equally variable in its form and markings with that of *C. teretiuscula*. . . . The nut, too, so far as I can see, is perfectly identical in the two plants. There are the same variations in outline, and, what is of perhaps greater importance, the base of the style in the two plants is enlarged in precisely the same manner."

Only in the subpaniculate inflorescence do Gibson's specimens show a marked difference from typical *C. diandra*. This character gives the plants such a distinctive appearance that Wood himself at first thought the plant might be *C. paradoxa*. But Wood also refers to a difference in the habit of Gibson's "species" which "assumes a pseudo-caespitose appearance" and has "elongate and slender stems" as compared with the "isolated and detached mode of growth" of *C. diandra*. Hence the plant fulfils all the requirements of *C. diandra* Schrank, var. *major* (Koch) A. & G., which is described (*Syn.*, ed. 1, 751, 1837) as "duplo saepe altior, radice magis caespitosa, spica crassiore magisque composita." The angularity of the stem referred to by Gibson as characteristic of his plant would appear to be a character associated with all large specimens whether of the normal form or the variety. Lloyd (*Fl. de l'ouest de la France*, 2 ed., 538, 1868) says:—"Les individus robustes ont la tige triquètre à angles obtus à la base, puis le milieu à faces convexes et le sommet très rude à angles aigus." I have not been able to detect any difference between Gibson's specimens and large *C. diandra* in this respect.

It has been urged that Koch's variety should be dropped as being not sufficiently well marked (*Watson B.E.C. Rep.*, 30, 1900-1; 22, 1901-02), a procedure which has been adopted in the last two editions of the *London Catalogue*. This view has been strengthened by the misleading illustration in *English Botany* (ed. iii, t. 1620, as var. *Ehrhartiana* Hoppe) which shows a plant with smaller and more slender and interrupted spikes than the normal form of the species. The illustration appears to have been prepared from specimens sent by Sidebotham from Seaman's Moss Pits and, apart from the discrepancy between it and the accompanying plate showing Gibson's specimens from the same locality (the difference is obviously much more marked in the Malham specimens), there is added reason to suppose that the wrong plant may have been sent as Gibson complained that Sidebotham had sent out ordinary *C. diandra* to both Babington and Samuel King as his *C. pseudo-paradoxa*. Though this accusation was denied, the illustration certainly does not bear out the accompanying description, and cannot be accepted as representing the variety. Misled by it, material sent through the exchange clubs, which scarcely differs except in size from normal *C. diandra*, has been passed as Koch's variety. Though there is no doubt that a complete range exists between *diandra* and *major* in the form of the inflorescence, the very distinctive appearance of such subpaniculate plants as Gibson's might alone justify a distinctive name whilst the different growth habit of such plants fully entitles them to varietal status.

EXPLANATION OF PLATE.

Type specimens of *Carex pseudo-paradoxa* S. Gibs. The two specimens on the left from Malham Tarn (coll. S. Gibson, 1840), the right-hand specimen from "near Manchester" (? Chorley Fields) (coll. G. Crozier, 1843), the remaining three from Seaman's Moss Pits (coll. J. Sidebotham, 1843).

Ripe nuts of *C. diandra* (upper row), *C. pseudo-paradoxa* (middle row), and *C. paniculata* (lower row).

REVIEWS.

Botanical Records of the London Area. Being a List of Plants observed within 20 miles of St Paul's Cathedral. Edited by E. B. Bishop, R. W. Robbins, and H. Spooner. Compiled by the Botanical Section of the London Natural History Society, and published in annual parts from 1928 to 1936, the eight parts being obtainable from the Secretary, Mr A. B. Hornblower, at 91 Queen's Road, Buckhurst Hill, Essex, at 6d each (plus postage).

This useful volume of 114 pages reflects great credit on its compilers and supplies a need in providing an accurate and recent account of the flora of the country within easy reach of London. The area covered includes Middlesex, and parts of Herts, Essex, Kent and Surrey, the published Floras of which are dated 1869, 1887, 1862, 1899 and 1931 respectively. Although the present work is by no means exhaustive, and consists entirely of records made by members of the London Natural History Society, yet as providing an account of the persistence of plants in their old recorded habitats, and the spread of various plants not known to the old botanists within an area fast being invaded by suburban villas, the importance of this small book is very considerable. Examples of plants which are rapidly spreading within the district are *Galinsoga parviflora*, *Senecio squalidus*, *Cynosurus echinatus*, *Lepidium Draba*, and *Cotoneaster Simonsii*. Extinctions cannot be traced so easily since failures to refind old records are not mentioned, and only in a few cases where plants have died out quite recently is the fact stated. It is stated that the destruction of *Maianthemum bifolium* at its old Middlesex station was due to the construction of a new path, but other observers have believed that an exceptionally hot and dry summer was the cause. It is interesting to note that the compilers of this list consider *Galanthus nivalis* " truly wild " by the River Mole in Surrey, an opinion far nearer the truth than one would suppose from the misleading account given on page 605 of Salmon's *Flora of Surrey* (1931). Actually the Snowdrop still occurs on the banks of the Mole at intervals for about 12 miles of its course, and the reviewer recently found one of these stations from directions a century old.

Evidently every care has been taken to ensure the accuracy of all records, and consequently obvious errors in the book are very few. But it should be noticed that *Euphrasia stricta* Host is not known as a British plant, that *Chenopodium urbicum* has probably in some instances been confounded with *C. rubrum*, var. *blitoides*, and that *Epipactis atropurpurea* is not a Surrey plant, *E. leptochila* probably being intended. Some of the omissions are rather surprising—thus *Fumaria Vaillantii*, *Polygala austriaca*, *Myriophyllum alterniflorum*, *Gentiana anglica*, *Orobanche elatior*, *Mentha longifolia* and *rotundifolia*, *Prunella laciniata*, and *Wolffia arrhiza* are certainly still to be found within the area South of the Thames.

It is to be hoped that the members of the L.N.H.S. will continue their careful work so that we shall have a permanent record of the detailed distribution of plants in this rapidly changing district.

J. E. Lousley.

Clarke, Lilian J., D.Sc., F.L.S. Botany as an Experimental Science in Laboratory and Garden. Pp. xvi + 138, with 9 photographic plates and 26 text figures. London: Oxford University Press, 1935; 6/- net.

The authoress of this little book was for many years head of the Science Department of James Allen's Girls' School, Dulwich, and here are recorded the experimental methods adopted by her in the teaching of botany. The great interest of the book lies in the account which is given of the ecological experiments carried out, consisting of the establishment of natural habitats, sand-dune, salt-marsh, and so on, in the garden, and of the subsequent recording of their history. This will be of interest to the practical ecologist as well as to the teacher of botany, who is also well provided for in the clear description and illustration of the laboratory experiments. P. M. Hall.

Gilbert-Carter, H., M.A., M.B., Ch.B. (i) Our Catkin-bearing Plants, an Introduction. Pp. xii + 62 with 17 photographic plates. London: Oxford University Press, 1932; 4/6 net. (ii) British Trees and Shrubs, including those commonly planted: a Systematic Introduction to our Conifers and Woody Dicotyledons. Pp. xv + 291. London: Oxford University Press, 1936; 12/6 net.

These two works by the same author may well be noticed together. The first is a second edition of a well-known little book which has been found useful for its handy size for the pocket, illustrations and concise descriptions.

The title of the second work involves a somewhat wide use of the term "British," since in it are described not only our native trees and shrubs but all those which are "widely grown in British gardens and parks." It follows, therefore, that this volume holds greater interest for the student working in botanical gardens, or even for the gardener, than it does for the general botanist. The arrangement follows Engler's classification and the author's views on nomenclature are challenging. The International Rules are established as the basis of botanical nomenclature, and it is accordingly regrettable to find such unfamiliar spellings as *Pirus*, based on the author's inability "to take seriously Article 70 of the Rules." Careless proof-reading is responsible for such minor typographical blemishes as *Rhamnus frangula*, *Erica tetralix*, *Pinus cembra* and others, which were noticed. The diagnoses are concise and good, and the printing is excellent. The general reader will welcome in particular the classical quotations, as well as the notes on pronunciation and derivations, which are a valuable feature of both volumes. P. M. Hall.

Handbook and Guide to the Herbarium Collections in the Public Museums, Liverpool. 84 pp.; illustrated with 14 plates. Published by the Director of Museums, Liverpool; price 6d.

This excellent sixpennyworth provides not only a guide to the 70,000 specimens in the City of Liverpool Herbaria, but also contains much of general interest to British Botanists. The list of collections incorporated in the Herbaria will prove of great value for critical workers, and one would wish that similar handbooks might be issued at a reasonable price by all similar institutions in Britain. There are Biographical Sketches of 26 Botanists, including Charles Bailey (Secretary and Treasurer of the B.E.C. from 1879 to 1900), Robert Brown, Sir William J. Hooker, Linnaeus, Sir J. E. Smith and other notable British and Foreign Botanists, and there is a chronological list of Liverpool Floras. The 14 plates include a photographic frontispiece of a specimen of the extinct *Erythraea latifolia*, portraits of various botanists, and photographs of a number of sheets in the Herbaria. A copious index is provided which is a clue to much useful information scattered through the text.

J. E. Lousley.

[I can confirm Mr Lousley's good opinion of this handbook, but have one suggestion to make. Reference is made to the presence of Linnean types in the Liverpool collections. In a second edition it would be of value to enumerate these types.—Ed.]

Heslop Harrison, J. W., D.Sc., F.R.S. The Natural History of the Isle of Raasay and of the Adjacent Islands of South Rona, Scalpay, Fladday and Longay. Reprinted from the Proceedings of the University of Durham Philosophical Society, Vol. x, Part 5 (pp. 246-341), with map and 17 photographic plates. Newcastle-upon-Tyne: Messrs T. & G. Allan; no price stated.

A short synopsis of the botanical results obtained by the parties from Durham University, which have visited Raasay and the adjoining Islands in recent years, is given in the paper on p. 299. Those who are interested will find the results set out at greater length in this publication, which combines papers upon the Geology, Flora, Lepidoptera, Trichoptera, Cecidomyidae, Hymenoptera, Psyllidae, and Hemiptera-Heteroptera: many of these papers are by Professor Heslop Harrison and the whole is edited by him. The photographic plates are excellent, and illustrate the remarkable geology and scenery of the Islands, as well as some of the more interesting plants in their natural surroundings. The book is well printed and will be an indispensable companion for any botanist visiting this interesting group of Islands. P. M. Hall.

Hitchcock, A. S. Manual of the Grasses of the United States. Pp. 1040, illustrated with 1696 figures. Government Printing Office, Washington, 1935; price $1.75 in buckram.

This book, with its average of over three excellent figures for every two pages, probably represents the best "value for money" which has

ever been offered to English-speaking Botanists. Every page is written with authority by one of the greatest students of the world's grasses, who has unfortunately passed away since publication, and the whole work presents the very latest views, especially on the thorny question of nomenclature. The labour which the book must have entailed may be judged from the fact that 1100 species are described, mostly with illustrations or distribution maps, and that the types of practically all of these and of their synonyms have been examined.

There are 29 useful pages on Morphology, Uses of Grasses, Nomenclature, Keys to the Genera, and Descriptions of the Tribes, followed by 742 pages of the descriptions of the genera and species. Synonomy is treated separately in 207 pages at the end of the volume, where full references to publication and types are given. Finally, there is a glossary and an excellent index.

Although only the most important varieties are included, this work will be of great value to British field botanists, since a very large proportion of our own grasses are described either as native or introduced American species. It can be confidently recommended as a volume which should be included in the library of every member interested in the Gramineae.

J. E. Lousley.

Hyde, H. A., M.A., F.L.S. Welsh Timber Trees, Native and Introduced; second edition. Pp. viii + 106 with 25 photographic plates and 24 figures in the text. Cardiff: National Museum of Wales and the Press Board of the University of Wales, 1935; 2/-.

This is a completely revised edition of the first of the excellent series of publications issued by the National Museum of Wales. The opportunity has been taken to incorporate additional notes and references and to bring the nomenclature up to date, as witness the adoption of the name *Q. petraea* Liebl. for the Durmast Oak. Although intended primarily to deal with Timber Trees from the sylvicultural standpoint, there is much in this book that will interest the general botanist. Of particular interest in this respect will be the treatment of the Elms, which has been entirely revised since the first edition. The botanist will regret that such genera as *Prunus*, *Pyrus* and above all *Sorbus* do not fall within the category of Timber Trees, while critical treatment of the Willows is also beyond the scope of this work. The photographic plates and text-figures are alike admirable and this very cheap little book should be in the library of every botanist, Welsh or otherwise. Its value is enhanced by the addition of Bibliography, Index and Glossary.

P. M. Hall.

Makins, F. K. The Identification of Trees and Shrubs. 2500 diagrams. J. M. Dent & Sons, 1936; 15/-.

The present work contains brief descriptions of all trees and shrubs cultivated or wild in this country, and hence might be expected to be of some use to British Field Botanists. The very wide scope of the

enterprise, however, has entailed reducing the descriptions of the various species to an average of about two lines each, which is scarcely sufficient for even superficial scientific identification. The diagrams occupy 128 pages, but with a little more care they might have been more helpful. Additions and Corrections occupy no less than seven pages. The Horticulturist should find the volume useful as amplifying commercial catalogues, but to the Botanist it is likely to make little appeal.

J. E. Lousley.

Pennell, Francis W. The Scrophulariaceae of Eastern Temperate North America. Academy of Natural Sciences of Philadelphia, Monograph No. 1. Philadelphia, 1935.

A very scholarly work containing several notes of considerable interest to British workers. The author's treatment of *Mimulus guttatus* and *moschatus*, and *Limosella subulata*, deserves careful study, and his remarks on *Veronica humifusa* Dickson suggest that the American plant so named may not be identical with the Scottish. Pennell states that *Chaenorrhinum minus* (L.) Lange, which was introduced in ballast to American sea-ports from Europe, spread to cindery railroad banks, finding there such an ideal environment that it now occurs exclusively in such habitats. In Britain, of course, the plant occurs widely in the cinders between the permanent way, having spread thence from arable fields. *Verbascum Thapsus*, introduced from Europe, spread so rapidly that at least one American botanist was deluded into supposing it native! This latest work on the Scrophulariaceae may be warmly recommended to those whose interests stretch across the seas.

J. E. Lousley.

Skene, Professor Macgregor. Flower Book for the Pocket. Illustrated by C. G. Trower and R. Weston. Oxford University Press, 1936; 7/6.

This delightful little volume is one of the best attempts yet made to enable those who are not yet botanists to identify our wild flowers with reasonable accuracy. Though sufficiently simple to be used by the novice with equal (if not greater) ease than those absolutely artificial keys based primarily on flower colour with all its pitfalls which have several times appeared in recent years, Professor Skene's new work also provides an admirable introduction to the botanical system employed in more advanced works. Identification is based first on a key to the Families in which simple though botanical characters are used, then on keys to the genera, and finally on descriptions of the species opposite to which, in most cases, a coloured illustration is provided. A total of 844 species described should enable the beginner to identify almost all the plants he is likely to encounter. The coloured illustrations of 501 species are a special feature of the work, and many of these were reproduced from drawings by the late Miss C. G. Trower, who for many years was a member of the B.E.C. and a highly respected friend of Dr

Druce. As mentioned in *B.E.C. 1928 Rep.*, 851 (1929), Miss Trower gave her beautiful paintings to Dr Druce, and it is by kind permission of his Executors that many of these have been published in the present work. The reproduction of the drawings by the two artists is very well done, and it is not easy to select any examples for special commendation, but the writer of this review was especially pleased with the plate showing two of the colour variations of *Erica vagans*, and those of *Calluna vulgaris* and *Bidens tripartita*. A very few of the drawings appear to have suffered in the necessary reduction of size, and that of *Antennaria dioica* is not likely to prove very helpful to the beginner. In addition to the colour plates, there are 28 grasses illustrated in black and white. The "Flower Book for the Pocket" may be warmly recommended as a suitable present for any friends whom members may wish to interest in British Botany.

J. E. Lousley.

Vachell, Miss E., F.L.S. (i) Flowering Plants and Ferns [of Glamorganshire]. Pp. 56 with 7 photographic plates. (ii) Glamorgan Botanists. Pp. 3. Both reprinted from Glamorgan County History, Volume I—Natural History; Cardiff: William Lewis (Printers) Limited, 1936.

The first of these reprints consists of two parts: first, a general review of the Flora of the county in relation to its geology; and, secondly, a list of Glamorganshire flowering plants and ferns. The second part is strictly a check-list, bringing up to date and summarising all the scattered information which has been published on the flora of this very interesting county. Though it will not give the field botanist much information on the lines of the usual County Flora, by which he may find plants, this part will be of considerable value for those who are working on what may be called the statistical side of the British flora. The introductory portion contains concise descriptions of the features of those districts of Glamorganshire which are of special interest botanically. This portion is no doubt devised for the general reader, and caters both for the amateur and expert botanist by enumerating the "English" and Latin name of every species referred to. This does not make for greater readability and if I may criticise without being captious I would suggest that the invention of "English" names for the Characeae—e.g., "Flaccid Nitella" (*Nitella flexilis*)—is somewhat absurd. The photographic plates illustrate some of the scenery and plants which will be familiar to those botanists who have visited the county. They vary somewhat in quality, but the photographs of *Limosella* at Kenfig and the patch of *Lathraea* are especially pleasing.

The second reprint gives a very short résumé of the lives and work of those who have contributed to the knowledge of the Glamorganshire flora, among them the authoress' father, Dr C. T. Vachell. Miss Vachell herself may well feel gratified at the result now achieved, the summary of her own work in Glamorgan and the work of those who preceded her.

P. M. Hall.

Wild Flowers, Grasses and Ferns of East Kent. A catalogue compiled by J. Jacob. "Dover Express and East Kent News," Dover, 1936; price 1/6.

In this small work of 32 pages the author lists over a thousand species (and varieties given as species), of which he has traced records for East Kent. The exact limits of the district are not defined, but apparently v.-c. 15 is intended. The catalogue is based on Hanbury and Marshall's *Flora of Kent*, with additional localities added from the author's fifty years' experience in the district. Although the work contains a number of records which will be of interest to students of the county flora it is primarily issued as a check-list for the use of local naturalists and is in no way intended as a scientific publication. It is hoped, therefore, that the zealous compiler will not be discouraged by the criticism which certain features must receive from more critical botanists, but will rather use it as a guide in producing an improved second edition.

Many of the records have been abstracted from Hanbury and Marshall's Flora—sometimes with unfortunate results. Thus *Silene italica* is given for Folkestone in spite of much that has been written on the Kent plant erroneously so labelled; *Cicuta virosa* and *Sonchus palustris* are given for Minster though the authors of the *Flora of Kent* wisely rejected the old records for that locality—though the last-named plant still occurs just within the vice-county on the Medway banks. One wonders what is intended by *Fumaria muralis* and *Taraxacum palustre*, and the popular name of *Limonium vulgare*, var. *pyramidale*, is certainly not "Matted Sea-Lavender." Neither is the distinction between old and recent records always clear—thus *Lythrum Hyssopifolia* is given for Faversham without authority, which may or may not mean that it still occurs there, and similarly we are left in doubt as to whether Mr Jacob has found *Calamagrostis lanceolata* at Walmer, whence there is an old record. But some of the records are of greater importance, though amongst those claimed as new to the area we notice *Galeopsis versicolor*, *Teucrium Botrys* (see also *Journ. Bot.*, 1925, 339) and *Daphne Mezereum*, which are not N.C.R.s for v.-c. 15. He has seen *Verbascum Blattaria* in two stations, and records *Calamintha Nepeta*, and it is pleasing to read that *Euphorbia Cyparissias* is abundant at the old Dover station. The Orchid list is a very good one, and we note that *Himantoglossum hircinum* is "increasing in recent years," and the author's suggestion that the famous Wye supposed hybrid of *Ophrys aranifera* and *muscifera* is perhaps a broad-lipped form of *O. muscifera* is interesting. The explanation of the records of *Cephalanthera rubra* as "probably planted" is novel—mis-identification is more frequently the case.

The nomenclature is archaic in parts. Misprints are fairly numerous, but not likely to mislead, and the general style of printing is good for such a publication. In spite of manifold shortcomings this little book should prove useful to Botanists visiting East Kent.

J. E. Lousley.

YOUNG, WILLIAM. A List of the Flowering Plants and Ferns recorded from Fife and Kinross (v.-c. 85). Trans. and Proc. Bot. Soc. Edin., xxxii, pp. 173, with uncoloured map, 1936; 7/6.

Mr Young has supplied a long-felt want in producing this List of the Flowering Plants of the counties of Fife and Kinross (v.-c. 85). His task must have been an arduous one, for although several herbaria, such as those of the British Museum and Boswell Syme, who was a native of Fife, have not been examined, yet most of the herbaria and a very great deal of the available literature has been consulted. One hopes that his example may be followed by other Scottish botanists, as there are still so many counties in Scotland which, although they have been more or less explored, have no collected records of their flora. In a brief introduction, Mr Young, after indicating the extent and topographical characters of the two counties, refers at some length to the various sources of information upon which he has drawn up to the present time from that of Sibbald, who published a list of plants in his "History of the Sheriffdoms of Fife and Kinross" more than two centuries ago. The literature is fairly extensive and the plants recorded are all listed in the Flora proper. Many of these old records, however, are of little value, noticeably those taken from the "New Statistical Account" (1836-45), written by the various parish ministers. These ministers were invited to supply, amongst other matter, notes on the botanical features of their parishes. Many, fortunately, refrained from doing so. If these Fife and Kinross records are, as they seem to be, as unreliable as those of most of the other Scottish counties, one feels it would have been better if they had been omitted altogether. There seems to be also a good deal of misstatement as to the comparative rarity or frequency of many of the plants. One can hardly credit that *Viola palustris* L. is rather rare and *V. odorata* L. frequent; that *Anthriscus sylvestris* Hoffm. is only frequent while *A. vulgaris* is common. Other rarities cited are:—*Cardamine flexuosa* With., *Geranium sylvaticum* L., *Spergula sativa* Boenn., *Lathyrus pratensis* L., *Taraxacum erythrospermum* Andrz., and *T. laevigatum* DC., etc. It is surprising, too, that in Fife, with its long coast line and stretches of duneland, *Cerastium semidecandrum* L. should be recorded as uncommon. Notwithstanding several inaccuracies, however, and a want of more careful observation on the author's part of the present-day distribution of the plants, this is a useful publication and a welcome addition to the literature of the flora of the Kingdom of Fife and of Kinross.

R. H. CORSTORPHINE.

ABSTRACTS FROM LITERATURE.

A. J. Wilmott, assisted by Miss M. S. Campbell and P. M. Hall.

The Abstracts are arranged on the same plan as was adopted in the Report for 1935, except that those Abstracts relating to changes in British taxonomy and nomenclature have been included in "Plant Notes," and those relating to vice-comital distribution have been included in "Plant Records."

[Pressure of work has prevented me from examining so many pediodicals as last year, but I hope to include those omitted this year in next year's Abstracts.—A.J.W.]

GENERAL.

(A) ANATOMY.

The principles of the rhythmic development and radial organisation of the flower are discussed by Saunders (1936 A).

(B) ECOLOGY.

Dead-nettle and Stinging-nettle Association.—The theory is advanced by Poulton (1936) that *Lamium album* L. is stimulated by the presence of *Urtica dioica* L. To test field observations, which appeared to support this view, two sowings were made of *Lamium album* seeds; one sowing was top-dressed with earth from a nettle-bed and the seedlings of this sowing were more vigorous than those of the other sowing. The soil used for the top-dressing was found to be comparatively rich in nitrogen, which, however, may have been inherent in the soil and not attributable to the Stinging-nettle, which grew in it.

Grassland.—The effects of irrigation of hill pasture in the Pentlands are described by Heddle and Ogg (1936). It is found to raise the pH (hydrogen-ion concentration) of the soil, reducing the amount of calcium required to neutralise acidity. *Festuca ovina*, *Deschampsia flexuosa*, *Vaccinium Myrtillus* and *Nardus* are reduced and *Agrostis*, *Festuca rubra*, *Trifolium repens* and *Poa trivialis* are encouraged by irrigation.

Lawn.—An account of the ecology of a lawn sown in the University of Pittsburg, U.S.A., is given by Van Dersal (1936). The grasses used were *Lolium perenne*, "*Agrostis alba*," *Poa pratensis* and *Agrostis canina*. There was no need to add organic material to the soil, as it tended to increase. The optimum pH lies between 5.0 and 6.5 when the grasses are sown separately, but competition may change the reaction at which a species succeeds. Clover is excluded at pH 5.5, and at or over 7.0 crowds out the grasses

Heath.—The association of *Cornus suecica* L. with *Pteris aquilina* at the Hole of Horcum, Saltersgate, N. Yorks, is discussed by Flintoff (1936 C). The *Cornus* is here found on relatively dry ground with a

northern aspect. Owing to *Calluna* burning, *Pteris* is spreading and the shading effect is beneficial to the *Cornus*.

(C) EVOLUTION.

The interesting theory is advanced by Hamshaw Thomas (1936) that, in view of the experimental production of mutations by short wave radiations and of the large number of species, especially endemic species, in mountainous areas, it is possible that mutations may be produced in nature by intense bursts of cosmic rays at high altitudes.

(D) NOMENCLATURE.

International Rules.—A résumé of the principal decisions on nomenclature at the 6th International Botanical Congress (1935) is given by Sprague (1936). In general, the text of the "International Rules of Botanical Nomenclature," ed. 3 (1935), representing the decisions of the 5th Congress, Cambridge (1930), has been accepted. January 1, 1935, is accepted as the starting-point for obligatory Latin diagnoses, instead of January 1, 1932.

Linnaean Synonymy.—Caspar Bauhin's "Pinax" and Burser's Herbarium are both of considerable value in the determination of Linnaean types. At the time when he was preparing for the first edition of "Species Plantarum," Linnaeus was in the habit of recording his specific names in the margin of his copy of the "Pinax." A Linnaean MS. contains Linnaeus' determinations of most of the plants in Burser's Herbarium, which still remains at Uppsala University. Linnaeus' own herbarium did not in 1753 contain all the species described in "Species Plantarum," ed. 1, and it is certain that there are many Linnaean type-specimens in Burser's Herbarium.—Savage (1936).

(E) PHYTOGEOGRAPHY.

Dispersal of Aquatic Plants.—Many acres of land on Benton Moor, north of Wallsend, have recently become water-logged, presumably on account of the collapse of disused mine workings. The margins of the newly-formed pond have become colonised by *Ranunculus Lingua* L., *Hippuris vulgaris* L., *Sparganium ramosum* Huds., and other species. This and other cases are described by Temperley (1936) as instances of aquatic plants being distributed by gulls and water-fowl.

Endemism.—That the older and larger a genus is, the larger number *and proportion* of endemics it should contain, and that the Monocotyledons appeared, and became dispersed, later than the Dicotyledons, are among the theories discussed by Willis (1936).

Origin of the British Flora: Endemics in the British Isles.—An account of the British endemic phanerogams is given by Wilmott (1936 C), and their importance to the study of the origin of our flora and the effects of the glacial period is discussed. It is held that while some of them might have originated since the glacial period, and some (*Hieracia*, *Rubi*, etc.) possibly during it in an inter-glacial period, others must be per-glacial survivals, and indicate an annual

mean climate (in spite of neighbouring ice) which enabled them to do so.

(F) TOPOGRAPHICAL.

British Isles.—The changes in the British Flora during the last 50 years, with a brief description of the species lost and gained and the reasons for such changes, are discussed by Wilmott (1936 A), who concludes: "The nett result would appear to have been some gain, little loss, but much danger from the varied activities of greedy or ignorant people."

Cornwall.—Cornish records of Flowering Plants and Ferns for the years 1930-1934 have been compiled by Thurston (1936). Many of the records have been published before in the Reports of this Society and of the Watson B.E.C., in the Journal of Botany, and elsewhere, but students of the Cornish flora will find in this paper many hitherto unpublished records. Some of the more interesting of the latter have been included in "Plant Records."

Cambridgeshire: Wicken Fen.—The long study of this interesting area now permits comparison of present and past distribution in detail, and the development of the fen scrub is described by Godwin (1936). The chief colonists in early stages are *Rhamnus frangula*, *R. catharticus* and *Viburnum Opulus*, and in the area studied the first is by far the most abundant. This preponderance appears to be responsible for the preponderance of seedlings of *R. frangula*, and not such factors as seed production, germination, and soil acidity. *R. catharticus* extends rapidly and kills out *Salix atrocinerea*. Eventually the *R. frangula* may also all die out and is replaced by carr dominated by *R. catharticus*. Many detailed maps and transects made in different years are given.

Suffolk and Norfolk: Breckland.—The first of a series of papers dealing with the ecology of this interesting area deals with its topography, climate, soil and generalities of the vegetation: Watt (1936).

Gloucestershire: Cotteswold Hills.—The effect of human habitation and exploitation on the vegetation of the Cotteswold hills is discussed by Beckinsale (1936). The ancient records have been searched for evidence of wood cutting, charcoal burning, common rights and the like, affecting the history of the vegetation. Much planting has taken place in the last 200 years.

Yorkshire.—The aquatic flora of Malham Tarn was examined in September 1936 by Drs W. H. Pearsall and W. A. Sledge, who found that the dominant species are *Potamogeton lucens*, *Chara aspera* and *C. delicatula*, which form almost pure communities. *P. alpinus* appears only to occur in shallow water, while *P. praelongus* and *P. angustifolius* were not seen. The plankton-flora is described and discussed.—Sledge (1936 A).

Perth-Angus boundary on the map in "Comital Flora."—On this map the western boundary of Angus is shown coincident with the R. Tay, whereas it should extend south-east from Coupar Angus. The area

thus erroneously shown as part of Angus (approximately covered by the word " Sidlaw " of Sidlaw Hills on this map) is part of E. Perth, v.-c. 89. It is already pointed out on p. xxx of *Comital Flora* that Kinross is also wrongly coloured—it should be coloured pink, being included with Fifeshire, v.-c. 85.—Lousley (1936 A), 201.

Outer Hebrides: Barra.—The vegetation of the island is dealt with ecologically (many lists) in the results of the Edinburgh University Biological Society's expedition in July 1935: Watson & Barlow (1936) (see also *The Book of Barra*, edited by J. L. Campbell, 1936—Routledge).

(G) SYSTEMATICS.

6. Ranunculus L. The nectary, its scale and their vascular supply have been studied in various British and other species, including *R. acris* L., *R. repens* L., *R. Ficaria* L., and *R. bulbosus* L. The inverted bundle which supplies the nectary does not reach the scale, but despite this the scale is presumably an " enation which follows the law of laminar inversion."—Arber (1936).

6/9. R. arvensis L. The structure and venation of the carpel is discussed by Troll (1934); its peltate plan is compared with that of others similar (*Thalictrum* and *Anemone*) in the same family, and with a parallel form in a leaf of *Spinacea oleracea*.

6/33. R. Ficaria L. The single bifid cotyledon is for various reasons considered by Metcalfe (1936) to be a single foliar organ and not the result of fusion; sometimes two bifid cotyledons and sometimes trilobed cotyledons occur; nothing in the anatomy or morphology is found which contradicts this view, and several points observed confirm it.

Berberidaceae. The pistils are considered to be derived from three free spirally arranged carpels, which have become fused, sometimes with expansion of the lowest carpel (*Berberis* . . .), and sometimes with loss of one carpel (*Epimedium* . . .); the family is thought to have originated from a pro-ranalian ancestor, to have developed parallel to the *Ranunculaceae*, and to show similarities (? ancestral or parallel) to the *Papaveraceae*.—Chapman (1936).

17/1. Berberis vulgaris L. The embryology of this and other species of *Berberis* is detailed by Mauritzon (1936).

54. Brassica L. Chromosomes. *B. campestris* (2 varieties) 2n=20; *B. juncea*, 2n=36.—Alam (1936).

Cistaceae. The vascular ground-plan of the flowers is described by Saunders (1936).

88/2. Viola " montana L." A photograph of a dried specimen, which matches plants in Woodwalton Fen, is published by Blom (1936 A), who details the occurrence of this species and its hybrids with *V. canina* and *V. Riviniana* in Goteborg and Bohus. [My article showing that *V. montana* L. was not this species but *V. elatior* Fries is once again ignored.—A.J.W.]

92/2. DIANTHUS DELTOIDES L. This species is included by Lemperg (1936) in a study of perennial pinks; var. *glaucus* Ser. with glaucous leaves and pale flowers is distinguished from var. *serpyllifolius* Borb., the most important green form, but British material is not mentioned.

96/1. SILENE MARITIMA With. Three different plants were crossed with a single plant of *S. Cucubalus* and the resulting populations are analysed by Marsden-Jones and Turrill (1936). The indumentum involves two main factors and one modifying; the leaf shapes require at least four; armadillo seeds are recessive to tubercled. The number of flowers per inflorescence, anthocyan development, and sex, are also complicated genetically: FFMM = ☿, FFmm = ♀, FFMm = fluctuating intersexes.

96/4. MELANDRIUM NOCTIFLORUM Fries. No "male" flowers were found among plants grown at Bedford College, Regent's Park, London. The petals of the "female" flowers are smaller than those of the hermaphrodite flowers. The majority of the hermaphrodite flowers only open once but the "female" flowers may open more often, the number of times perhaps depending on the pollination of the flower and on the weather. The "female" flowers are pollinated by night-flying insects but the hermaphrodite ones are always self-pollinated, the anthers dehiscing before the bud opens. There appear to be a number of strains or races within the species, which may have arisen through the self-fertilisation of the hermaphrodite flowers.—Halket (1936).

133/3. IMPATIENS PARVIFLORA. The chromosome number given by Schürhoff (n = 10) is not confirmed by Wulff (1934), who finds n = 12 in the generative cell.

LEGUMINOSAE. The Vascular anatomy of some British species is described by Moore (1936), who recognises three types (*Baptisea*, *Lathyrus*, *Phaseolus*); all the British species mentioned—*Medicago lupulina* and *sativa*, *Melilotus alba* and *officinalis*, *Trifolium hybridum*, *pratense* and *repens*, *Lotus corniculatus*, (*Coronilla varia* and *Lathyrus latifolius*)—belong to the *Lathyrus* type.—Moore (1936: 279-). The floral nectaries and discs may represent various floral parts; perigyny is the usual condition of the flower.—Moore (1936: 354).

153/3. MEDICAGO SATIVA L. Variability in the seed production of this crop has produced a considerable literature on the pollination of this species. The pollen is normally shed in the bud into the keel and normally covers the stigma, which is surfaced by a film of cells which keeps the pollen from the underlying sticky tissue on which it can germinate. The staminal column is under tension and when the flower is visited by an insect or otherwise disturbed the explosive release of tension drives the stigma up against the standard (the movement known as "tripping" of the flower) and the protective stigmatic film is ruptured. Cross

pollination is therefore to some extent possible, and this results in stronger plants with greater seed production. Complete self-pollination results in a reduction of 40% seed production in one year and 70% in two. The seed-production does not vary exactly in proportion to the percentage of flowers "tripped" except in the greenhouse where no tripping results in no seed. In the field in dry conditions self-pollination without tripping occurs. Abortive pollen occasionally limits seed-production and rarely the stigma may be placed above the pollen shed in the bud and pollination is thus prevented.—Brink and Cooper (1936).

154/2. Melilotus alba Desr. Two populations of biennial diploids were heated at the time of division of the zygote and proembryo. In one population heated for 30 minutes at 40°-41° C. (104°-106° F.) one tetraploid [n = 16; 2n = 32] was found which was almost completely self fertile. In another population heated for 20 minutes at 38°-40° C. (100°-104° F.) one triploid, which was only slightly self fertile, occurred.—Atwood (1936).

155. Trifolium L. Seeds from 38 packets discovered in a box belonging to Charles Darwin and at least 53 years old were tested. The seeds belonged to various genera but the only seeds found to be viable belonged to three species of *Trifolium*.—Turner (1936).

166/3. Astragalus danicus Retz. Details of its occurrence and habitat in Sweden, where it is rare, are given by Frisendal (1936).

176/3. Vicia Cracca L. The range of this species in North America, and the distinctions from allied alien species (which are those also alien in Britain) are set out by Fassett (1936).

195(2). Sorbus L. Gatherings of Sorbi made in Gloucestershire by Riddelsdell were sent to Hedlund for determination. As a result a new name is published: *S. globulifera* ["Hedlund in litt. sub-sp. nov." ex] Riddelsdell (1936: 298). A description quite useless for the distinction of such critical forms is given, but fortunately a type is cited (S. 34/12 in Hb. H. J. Riddelsdell). [In spite of protest against this action while Mr E. F. Warburg and myself were working at this group, this determination of Hedlund's has been published. Since the Sussex (Bignor) specimen previously known to Hedlund is cited, it is doubtful whether the type cited by Riddelsdell would have been cited by Hedlund. As the type and publication both depend on Riddelsdell (who thus confuses both Hedlund's and our own studies), Hedlund's name is better omitted from the citation, the more so as Hedlund's MSS. sub-species is published as a species. Until the § *Aria*, to which it belongs, is better known in this country, its value cannot be ascertained. *S. Aria* is very variable on the Cotteswold hills, and the type specimen was gathered after a summer drought. The chief characteristics mentioned are the small leaves and tiny fruits. For the moment it is best ignored.—A.J.W.]

199/18. Saxifraga cernua L. Details are given by Melchior (1934) of the distribution in the Alps of this "arctic" species (with a map); it occurs in the Bernese and Maritime Alps, the Silvretta and Oetztal Alps, the Dolomites, and three more eastern massifs in Austria, but for the most part the localities are few and wide apart. [It is clearly a relic of glaciation.—A.J.W.]

211. Sedum L. Part IV (with index to the whole work) completes the monograph of the genus by Floderström (1935).

Droseraceae. This family has been held to be closely allied to the *Violaceae* on account of similarities in floral structure, the purely vegetative features affording points of distinction. Bergdolt (1935), however, finds great similarity in the arrangement and form (fringing) of the stipules, which in the apparently primitive state (seen in *Drosera anglica* growing in insufficient light) is an outgrowth from each side of the leaf in both families.

220/1. Epilobium angustifolium L. Its deep seated renewal buds afford excellent protection against burning, and the unusual development of (interxylary) periderm each year gives external and internal protection against desiccation.—Moss, E. H. (1936).

223. Oenothera L. Contrary to views published by Gates, *O. muricata* was the first of the American Oenotheras in Europe (England, 1612). *O. biennis* was probably the first in French gardens. A long account of the history of the genus in Europe is given by Wein (1936).

287/2. Sambucus nigra L. Bushes with "white" fruits are said to produce the best berries for Elderberry wine; the average weight and diameter of "white" fruits are greater than those of normal fruits.—Dallman (1936 C).

301. Valeriana L. Blackburn (1936) discusses the paper by the late Dr E. Drabble in *B.E.C. 1932 Rep.*, 249-257 (1933) with special reference to Northumberland and Durham specimens and material in the Hancock Museum and Armstrong College Herbaria. It is pointed out that in describing *V. officinalis* L., f. *dentatifolia* Druce, Drabble must have obtained details from the type specimen, since Druce's original diagnosis does not point clearly to this plant. [The citation, therefore, should strictly be "Druce emend. Drabble," if *dentatifolia* is retained as a variety, in which grade it was originally described; or "(Druce) Drabble," if the grade is changed to forma.—Ed.]

It is stated that in *V. dioica* L. the chromosomes are in multiples of four, but in *V. officinalis* L. agg. in multiples of seven, *V. sambucifolia* having 56 and two forms of *V. officinalis* 14 and 28 respectively.

320/3. Erigeron canadensis L. Chromosomes n = 9, Cooper and Mahony (1935: 847).

370/4. Chrysanthemum Leucanthemum L. Chromosomes n = 18 in "var. *pinnatifidum*"; Cooper and Mahony (1935; 847).

419. Hieracium L. A booklet containing forty photographs of Swedish (Småland) specimens determined by Dahlstedt has been published by Lundin (1935); several of the species are those in our British list.

425/2. Lactuca Scariola L. Chromosomes n = 9 in "var. *integrata*" —a ring of 4 chromosomes and 7 pairs—Cooper and Mahony (1935; 847).

427/4. Sonchus oleraceus L. Chromosomes confirmed as n = 16 by Cooper and Mahony (1935; 847).

431/1. Lobelia Dortmanna L. This species is dealt with by McVaugh (1936) in a paper on the North American species of the genus. Its seeds are figured in plate 435, fig. 13. "The modern range . . . suggests a circumpolar range in pre-glacial times" (p. 247, map p. 358).

Primulaceae. The anatomy of the gynaecium shows a development of "fundamentally the same type" as that of the *Caryophyllaceae*: Dickson (1936).

The vascular anatomy of several British species has been studied by Douglas (1936):—*Lysimachia Nummularia* L., *L. punctata* L., *L. thyrsiflora* L., *Anagallis arvensis* L.

460/1. Primula elatior (L.) Jacq. The characters and variation of the hybrids between this species and *P. veris* L. and *P. vulgaris* Huds., with special reference to the East Anglian forms, are discussed by Melville (1936).

478. Centaurium Hill. The types of habitat of the three forms found on Ross Links, Cheviotland, are described by Heslop Harrison (1936 C).

478/3. Centaurium latifolium (Sm.) Dr. An account of the occurrences of this plant in Lancashire, together with a list of specimens in public Herbaria and photographic plate of the most recent specimen, "Sandhills, Formby, August 1871, R. Brown," is given by Stansfield (1936) and Wigglesworth (1936).

Polemoniaceae. From studies of floral anatomy and morphology it is suggested that the family represents "a line of development from a three-carpellate Caryophyllaceous stock" before free central placentation became established.—Dawson (1936).

511/4. Convolvulus Soldanella L. This species spreads by rhizomes about 10 cm. below the surface and at some seasons by arching aerial branches, the whole growth system being discussed by Purer (1936).

517. Solanum L. An account of the species occurring adventively in Sweden is given by Blom (1936 B).

532/26. Linaria Cymbalaria (L.) Mill. Monographic study of the sect. *Cymbalaria* by Cufodontis (1936); the form with white flower (throat yellow) is f. *albiflora* Guad. (p. 61), and that without a spur is f. *antirrhiniflora* (Gerb.) Cufodontis.

543/18. Veronica persica Poir. Chromosomes 2n = 28 (tetraploid: with tetrad structure in premetaphase): Beatus (1936).

543/19. V. agrestis L. Chromosomes 2n = 28 (tetraploid: with tetrad structure in prematephase): Beatus (1936).

588. Plantago L. The structure of the ovary in the five British [Linnean] species is discussed by Dowling (1936). In all five species the ovary is bilocular with an axile placenta. It is suggested that the British species present a series showing increasing sterility of the ovary from the many-seeded condition of *P. major* to the two-seeded condition of *P. lanceolata*, in which a one-sceded fruit frequently results from the abortion of one ovule.

588/5. P. maritima L. An introductory study of the species, based on cultivation and statistical observations of a large number of different features, is given by Gregor, Davey, and Lang (1936) as No. 1 of a series entitled "Experimental Taxonomy." The data tabulated indicate the wide variation of this polymorphic species. The authors consider that although this is not antagonistic to orthodox taxonomy, the experimental results cannot yet be absorbed into the existing system without confusion.

588/8h. P. lanceolata L., var. anthoviridis Wats. The imperfect pollen grains in the variety are 18-20 μ in diameter, as against 30-34 μ in the typical form. Viable seeds are formed in the variety but further experiment is necessary to determine whether the variety breeds true or reverts to type.—Watson (1936).

611/3. Salicornia dolicostachya Moss. Most of the material from the West Coast of Sweden determined as *S. dolicostachya* Moss seems to be *S. strictissima* K. Gram.—Blom (1936 C).

616/1. Fagopyrum esculentum Moench. The embryo is of Schnart's crucifer type and its apparent curvature is due to enormous growth in width of the Cotyledons.—Mahony (1936).

621/1. Asarum europaeum L. In spite of the floral structure this is considered by Kugler (1934) to be self-pollinated. Flowers when slit open never contained an insect, nor have insect visitors been observed after many hours watching (only during the day the author thinks nocturnal visitors unlikely and was unable to make observations). The stigmas were always found to be free from pollen until the first stamen had dehisced (table of daily development is given), but were then always found pollinated, and the course of development of stamens makes self-pollination easy.

628/11. Euphorbia Cyparissias L. This species is [at least sometimes] self sterile, and when an isolated colony has arisen from a single seed it is found to be barren; if a colony has arisen from several seeds it fruits freely.—Muenscher (1936 B).

632/1. Mercurialis perennis L. A detailed study of this species has been made by Mukerji (1936). The seed and its germination, the development of the seedling and the biology of the adult

plant, both root and shoot systems, flowering, pollination, seed dispersal and vegetative multiplication, are dealt with in detail. The first part deals with the taxonomy and distribution of the whole genus. The far eastern *M. leiocarpa* Sieb. & Zucc. is regarded as one of three varieties of *M. perennis*, the other two being var. *genuina* Müll.-Arg. and var. *Salisburyana* Mukerji, 1927, the characters of all three being given as well as those of six habitat forms.

The effects of various soil factors on growth and distribution are examined in Part IV, and of light intensity on the growth and distribution of the two sexes in Part V. The vigour seems to be unaffected by low or high carbonate content, and the species is not a true calcicole but an "oxyphobe," i.e., avoider of acid soil. Soils with high organic content are preferred. High light intensity favours the male plants and low intensities the female; in medium intensities the two sexes are about equally mixed.

633. Ulmus L. Results of studies of this genus continued during 1935 are given by Bancroft (1936 A), who considers that the solution of its species problem lies in the impossible task of breeding them out, and does not believe that the species limits can at present be determined. *Ulmus minor* [*U. sativa* Mill. sec. Moss] is said to be common in the Cotentin [Normandy: dep. Manche].

Details of autumnal colour changing and leaf fall are given by Bancroft in a second note (1936 B), and the series is further continued with miscellaneous observations, including:—Winter Silhouettes (p. 127), Observations in the Cotentin (p. 392), Guernsey Elm (p. 429), in the Netherlands, and a Summary (p. 445).

Dr Bancroft's conclusions are questioned by Hillier (1936), who evidently considers (as do I) that the fact that the variability bewilders Dr Bancroft does not mean that the specific limits are so indefinite that the attempt to define species should be given up. An important point made is "the regrettable fact that prior to the Great War for one hundred years, and probably much longer, cheap seedlings and transplants of hybrid Elms had been imported from France yearly by the thousand. . . . Consequently these hybrid Elms are met with as planted trees in many parts of the country."

656/1. Elodea canadensis Michx. This species was used in experiments by Wilson (1936) on root hair formation; root hairs are produced from specialised hair-producing cells, and the conditions inducing their production are the entry of the substratum (especially if this is clean sand) by the root. Roots produced in darkness do not make root hairs until they enter the substratum.

Increase of light markedly increases the salt absorption: Ingold (1936).

669/14. Orchis mascula L. A very remarkable spike bearing ten flowers, each composed of twelve parts including the five anthers normally suppressed, was gathered by J. D. Grose in N. Wilts. A detailed account of this abnormality, thought to be the first of its kind recorded from Britain, is given by Hall (1936 A).

669/18. Himantoglossum hircinum (L.) Koch. A detailed account of the occurrences in England up to 1933 is given by Good (1936), together with a survey of the total range of the species, illustrated by a map. The very marked increase in distribution in the south and east of England between 1900 and 1933 coincides with (and is attributed to) a climatic change, which occurred about 1900. The spread of the species in England is illustrated by 4 maps.

702/6. Allium ursinum L. Studies of the distribution of this species in the Göttinger Wald have been continued by Schmucker (1934). The plant is limited to the high ground, and a detailed map and profile diagram are given. The water content of the soil is an important factor in determining the distribution, for the species is excluded from areas only slightly wet in spring.

724/1. Acorus Calamus L. The indigeneity of this species in the United States is discussed by Harper (1936). Previous to the Civil War several writers were sceptical, " but less skepticism seems to have been expressed since."

727. Lemna L. Studies of the interaction of external factors on the growth are continued by White. Strains of *L. minor* from different localities grow at different rates under constant conditions, the differences increasing with higher light intensity.—White (1936; 847). The rate of increase in frond number varies with potassium concentration, and potassium-starved colonies show high starch content and low assimilation rate.—White (1936; 195). The effects of varying nitrogen are tabulated.—White (1936; 416).

729/1. Alisma Plantago-aquatica L. Pollen grains described and figured (with others of the family) by Wodehouse (1936).

734/1. Butomus umbellatus L. The flowers are normally proterandrous although self-pollination can occur as some pollen may be still left in the inner stamens when the stigmas ripen; this is, however, purposeless, since the species is quite self-sterile.—Pohl (1935).

Naiadaceae. The flower structure of the simplest *Helobiae* (a group in Engler's system of classification which includes families 102 and 103 in Druce's list, ed. 2) is discussed by Markgraf (1936) in relation to their phylogeny. A key to the genera is appended, in which the British genera are placed as follows:—

Potamogetonaceae.

Triglochineae: *Triglochin.*

Potamogetoneae: *Potamogeton, Ruppia.*

Zostereae: *Zostera.*

Naiadaceae.

Zannichellieae: *Zannichellia.*

Naiadeae: *Naias.*

The remaining genus of the old Juncaginaceae—*Scheuchzeria*—is included in the Liliaceae (Tofieldieae).

737. Potamogeton. L. Seeds of eighteen species were germinated by Muenscher (1936 A). After drying in air for two months germination is almost nil and storage for two to six months in cold water increases the percentage of germination in most of these species. The § *Pusilli*, which normally grow submerged so that wind pollination is difficult and improbable, may produce viable seeds; they also reproduce vegetatively by winter buds.

737/31. Potamogeton densus L. Unlike *Elodea* (q.v.) this species produces root hairs independently of the root entering the substratum.—Wilson (1936; 127).

738/2. Ruppia rostellata Koch. The relation of this species to its habitat and its association with *Zostera* is detailed by Philip (1936).

740. Zostera L. A very full account of the morphology of both *Z. marina* and *Z. nana* is given by Markgraf (1936) from examination of material collected by himself in 1935. Existing contradictory statements are deemed due to incomplete observation of fact.

740/1. Z. marina L. The relation of this species to its habitat in the Humber estuary has been studied in considerable detail by Philip (1936).

741. Najas L. An account (with distribution maps) of the occurrence of *N. marina* L. and *N. minor* All. in the United States is given by Clausen (1936; leaf bases and seeds are figured on pl. 438).

750/1. Cladium Mariscus R. Br. The anatomy has been investigated from an ecological standpoint by Conway (1936). Until it flowers, all the growing parts are below water; the large internal air spaces are probably continuous throughout the plant, although in some parts they are much restricted. In the second paper the conditions of its habitat in Wicken Fen (Cambs.) are stated (two years of records), especially as regards soil temperature and soil atmosphere. The absence of frost is significant. Unless the soil is actually waterlogged, oxygen is at least 12% in the peat soil.

Gramineae. Although it is generally supposed that the grass flower is derived by suppression from the normal trimerous organisation of the Monocotyledons, it is remarkable how constant are the two styles of most groups and how rare are cases of reversion. The occurrence of three styles has been recorded in *Briza media* and in *Hierochloe*.—Salisbury (1936).

758/3. Spartina Townsendii H. & J. Groves. From information so far received the attempts to grow rooted offsets and seeds from England in places in or near the tropics, with the exception of Honolulu, have been unsuccessful. Experiments in Australia show promise. The normal period of viability is about fifteen weeks but the journey through the tropics has a depressing effect on seed germinated in New Zealand, and in no case has germination been reported from the tropics.—Bryce (1936).

780/2f. Agrostis stolonifera L. Chromosomes—var. *palustris* (Huds.) 2n = 28; var. *maritima* (Lam.) 2n = 56, " 28 bivalents with much lagging " (pollen about 50% sterile and abnormal cells frequent): Church (1936; 12).

787. Ammophila Host. Among *A. arenaria* and *A. baltica* growing together on Ross Links, Cheviotland, it was noticed by Heslop Harrison (1936 D) that *A. arenaria* bore a plentiful crop of Ergots, whereas none were seen on *A. baltica*.

802/1. Phragmites communis Trin. The long shoots which this species rarely produces, either floating on the water or running along the surface of the ground to a length of 20 yards, have a structure half-way between that of the stem and rhizome. They produce adventitious roots and lateral shoots instead of leaves, and have a strong and unlimited growth. Causes of their production are mechanical influences, currents, wave action, and wind.—Müller-Stoll (1936).

824/2. Poa pratensis L. In New England chromosomes (fig. 8-16) 2n = 56 with much lagging in heterotypic division; pollen 50% shrivelled.—Church (1936; 14).

826/4. Festuca elatior L. Chromosomes 2n = 14 (diploid) in England, Germany, and New England—Church (1936); St Ives, found 2n = 14 in sub-sp. *pratensis* and 2n = 42 in sub-sp. *arundinacea*.

826/9. F. ovina L. Chromosomes vary; tetraploids and hexaploids (x = 7) occur in Europe and an octuploid in New England.—Church (1936).

826/12. F. capillata Lam. Chromosomes confirmed as 2n = 14 by Church (1936).

840/1. Taxus baccata L. Certain differences given by Chamberlain between this species and *T. canadensis* (concerning the gametophytes) are shown by Saxton (1936) not to exist.

850/1. Phyllitis Scolopendrium (L.) Newm. For photograph of this species in its single locality in Sweden (map p. 236) see Skottsberg (1936: p. 238).

851/5. Asplenium adiantum-nigrum L. A detailed map of the distribution in Scandinavia is given by Skottsberg (1936; 236).

857/4. Cystopteris fragilis Bernh. Regenerating leaves produced both normal sporophytes and abnormal prothalli; diploid

prothalli and tetraploid sporophytes were also obtained by Lawton (1936).

864/1. Osmunda regalis L. Diploid prothalli and, subsequently, tetraploid sporophytes were obtained by Lawton (1936) by regeneration from primary leaves of diploid sporophytes.

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Note.—This bibliography refers not only to the Abstracts from Literature but to the contents of the Report in general, except such papers as may have their own bibliography.

Abbreviations of Titles of Pediodicals.

Additions to list previously published see *B.E.C. 1935 Rep.*, 153-155 (1936).

BDB.Ges. = Berichte der deutschen botanischen Gesellschaft.
Nat. = The Naturalist.
P.Cottesw.Nat.FC. = Proceedings of the Cotteswold Naturalists' Field Club.
JRIC. = Journal of the Royal Institution of Cornwall.
SE.Nat. = The South-eastern Naturalist and Antiquary (being the Proceedings and Transactions of the South-eastern Union of Scientific Societies).
Vasc. = The Vasculum.

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APPENDIX.

REPORT OF THE FIELD WORK SUB-COMMITTEE.

Miss M. S. Campbell, Miss E. Vachell, Dr R. W. Butcher, Mr H. W. Pugsley.

It appears to be the feeling of a large number of members of the B.E.C. that the Club's excursions have often been exclusively devoted to visiting well-worked localities, with their special and frequently very rare plants, under the leadership of local botanists. After consideration the Sub-Committee finds that the interests of British Botany would be better served by the institution of a series of excursions with a somewhat different object in view, such as are outlined in this Report. The Sub-Committee hopes that these excursions, if revised as proposed, will not only maintain the advantages of the existing system but have a wider appeal than in the past, as they should afford greater opportunity for real field-work, possibly resulting in contributions to the knowledge of the British Flora. The use of these excursions for the purpose of listing and gathering wild flowers for competitions should be discouraged.

The Sub-Committee proposes that excursions should, where possible, be: —

(1) to places where the flora appears to have been inadequately studied,
(2) to places promising an interesting, varied, or unusual flora,
(3) to places which would afford special opportunities for the study of certain critical groups.

If possible there should be from four to six excursions each year, including one lasting for about a week (or longer in special circumstances), one or two to occupy a week-end or two to three days, and two or more day or half-day excursions within easy reach of centres having a large membership.

It is considered desirable that an account of the botanical work undertaken on these excursions should form a contribution to the B.E.C. Reports, and that some members of every excursion party should be responsible for the compilation of the necessary information.

The Sub-Committee recommends that the organisation of excursions should in future be entrusted to a permanent sub-committee; such sub-committee to consist of a convener and two other members, with power to co-opt additional members and to enlist the services of Local Secretaries when required. This sub-committee should draw up a leaflet or leaflets announcing the dates and places to be visited, with the names of the referees and/or leaders and particulars of headquarters and accommodation available (members will then make their own arrangements). Other information on the leaflets should include an outline of the routes to be taken and details of permission to visit estates, and where possible a general account of the natural features and any other desirable data.

The matter of guests attending excursions is referred to the General Committee.

Members of the Club could be invited to forward suggestions for suitable localities for excursions, in time for consideration by the sub-committee, who would present their programme for each ensuing year at the November (or other) meeting of the General Committee, with a view to a preliminary announcement at the Conversazione, or other suitable occasion.

OCT 1937

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1936

OF THE

BOTANICAL EXCHANGE CLUB

(CONVENIENTLY ABBREVIATED B.E.C. REP.)

BY THE

DISTRIBUTOR

B. C. WALLACE, Esq.

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Victoria Regina.

Floreat flora.

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BY THE

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E. C. WALLACE, Esq.

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YARDLEY LODGE, CRICK ROAD, OXFORD.

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PRINTED BY T. BUNCLE & CO. LTD., ARBROATH.
AUGUST 1937.

REPORT OF THE DISTRIBUTOR FOR 1936.

Once again the Distributor has to chronicle a decline in numbers of the sheets sent in for distribution. As Mr Jackson remarked in last year's Report, there has been a downward tendency during the years just past. At the same time the quality of the plants sent has deteriorated and by this I mean that too large a proportion of common non-critical species (sometimes poorly prepared) has been submitted. In this distribution there was a decided paucity of useful critical material, several genera such as *Ranunculus*, *Fumaria*, *Rosa*, *Hieracium*, *Euphrasia* and *Orchis* being totally unrepresented. *Rubus* and *Epilobium* furnished some interesting gatherings It is not out of place here to mention that the British *Rubi* and their distribution are still very imperfectly known. Members could extend our knowledge considerably if they would collect examples of all forms growing in their own districts, following the instructions given in the *Rubus* section of this Report. Two good sheets carefully dried would be sufficient of each plant if not intended for distribution. Certain other critical genera could be treated in a like way.

The Referees for *Rubus* point out that the 1936 season was a bad one for *Rubus* in many districts. The late frosts followed by a wet summer caused much abnormal and unhealthy growth. Gatherings which do not fairly represent a normal state of the plant are of little use for a general collection.

It should not be necessary to remind members that they can do valuable work in elucidating the distribution of critical plants, micro-species and varieties by collecting in other than well-known, much-visited botanical localities. There are many stretches of country in Britain, and particularly in Ireland, that would repay such careful investigation, and in these days of quick and cheap transport it would be an easier task than it was twenty or more years ago.

All those participating in the Distribution will tender thanks to the following botanists for useful notes:—G. M. Ash, W. C. Barton, C. E. Britton, Mrs H. Drabble, P. M. Hall, W. O. Howarth, C. E. Hubbard, H. A. Hyde, A. B. Jackson, R. Knowling, J. E. Lousley, A. L. Still, A. E. Wade, W. Watson, and A. J. Wilmott.

E. C. Wallace.

Sutton, Surrey,
April 3rd, 1937.

LIST OF CONTRIBUTIONS.

	Sheets.	Gatherings.
G. M. Ash	79	6
C. E. Britton	74	5
G. C. Brown	89	7
R. J. Burdon	39	4
J. F. G. Chapple	275	17
E. S. Edees	61	6
H. Foster	86	12
J. D. Grose	122	11
P. M. Hall	115	10
R. Knowling	12	1
J. W. Long	95	9
Nottingham Public Nat. Hist. Museum	150	18
F. Rilstone	82	8
C. M. Rob	81	6
W. A. Sledge	74	5
National Museum of Wales	138	13
E. C. Wallace	168	12
C. Waterfall	63	10
	1803	160

Thalictrum Babingtonii Butcher, *teste ipso*. [Ref. No. 1829.] Abundant among gorse bushes on the limestone at Berry Head, Brixham, S. Devon, v.-c. 3, July 19th, 1936, with good fruit.—P. M. Hall.

Myosurus minimus L. [Ref. No. 19.] Sandy lane, Aughton, near Bubwith, S.E. Yorks, v.-c. 61, May 16th, 1936. New to v.-c. 61 and discovered here by Mr James Kendall of Selby.—W. A. Sledge.

Berberis vulgaris L. [Ref. No. 1057.] Watchfield, Berks, v.-c. 22, May 14th, 1936.—J. D. Grose. "This locality is not given in Druce's *Flora of Berkshire* nor in the Supplement (1918)."—E. C. Wallace.

Berberis Aquifolium Pursh. [Ref. No. 1454.] Charlton, N. Wilts, v.-c. 7, April 5th, 1936.—J. D. Grose.

Barbarea vulgaris Br. (? var. *transiens* Druce). Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41, May 13th and June 9th, 1936.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales. "This plant matches fairly well a plant distributed in 1923 by J. W. White from Tyndall's Park, Bristol, as var. *transiens* Dr., and accepted by Dr Druce as this variety (*B.E.C. 1923 Rep.*, 374, 1924). But this plant and White's—neither of which I should label var. *transiens* Dr.—are very different from other specimens of this variety in Hb. Druce, which conform more nearly to the description in *Fl. Berks*, p. 44."—J. Chapple. "I would prefer to name this var. *campestris* Fr. Druce ascribed to his variety leaves with rather oblong terminal lobe and linear lateral lobes in length much exceeding terminal lobe. A. B. Jackson in his account of *Barbarea vulgaris* R. Br. gave to var. *transiens* stem-leaves with terminal lobe oblong-cuneiform; and well-developed lateral lobes exceeding the terminal in width. The plant distributed does not agree with the characters given as regards the shape of the lobes and relative dimensions, although the lateral lobes appear more numerous than usual."—C. E. Britton. "The note in Appendix I to *Hayward's Pocket Book*, 19th ed., 269 (1930), says:—'Ls. with lateral linear lobes much exceeding in breadth the long terminal lobe.' This seems to imply that in *transiens* the terminal lobe is remarkable for its length and narrowness, but these characters are not apparent in the two plants on my sheet."—P. M. Hall.

Cochlearia officinalis L. [Ref. No. 1625.] Shore 1 mile north of Baltimore, West Cork, v.-c. H.3, May 17th, 1936. This gathering comes from an area in which Praeger (*Botanist in Ireland*) states that *C. groenlandica* and the hybrid *groenlandica* × *officinalis* are found but I do not think it is possible to separate this gathering from *C. officinalis*.—P. M. Hall. "I saw these plants while drying and agree that they cannot be separated from *C. officinalis*."—E. C. Wallace.

Cochlearia alpina Wats. Gordale Scar, Mid-West Yorks, v.-c. 64, June 2nd, 1936.—H. Foster.

Hesperis matronalis L., in young fruit. Garden weed (for 50 years past), Lambourne Hill, Perranzabuloe, West Cornwall, v.-c. 1, June 22nd, 1936.—F. Rilstone.

Brassicella Cheiranthos (Vill.) Pugsl. [Ref. No. 1876.] Hedgebanks west of Fawley, S. Hants, v.-c. 11, August 1st, 1936. This species was first recorded in this locality by H. & J. Groves in 1879. It still occurs in considerable abundance over a limited area, where it appears to be confined to roadside hedgebanks.—P. M. Hall.

Brassica incana F. Schultz. Waste ground, Cardiff Docks, Glamorgan, v.-c. 41, October 1936.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales. "*Hirschfeldia incana* (L.) Lagreze-Fossat, in untypical late autumn condition. These specimens, like those from Jersey, Newhaven, and Glynde, E. Sussex, and Richborough, E. Kent, have the pods almost glabrous. The plate in *English Botany* (*E.B.S.* 2843) was drawn from Babington's Alderney specimens, with pods hairy except near the apex, and is var. *hirta* (Babington) O. E. Schulz in *Das Pflanzenreich*, *4*, 105, Cruciferae-Brassicae, Part I, p. 141, 1919. (*Erucastrum incanum* W. J. Hooker in Sowerby, *E.B. Supplement III*, 1840)."—J. E. Lousley.

Lepidium ruderale L. Canal-side, Lenton, Nottingham, v.-c. 56, June 1st, 1936.—Coll. R. Bulley, comm. Nottingham Natural History Museum. "Apparently an addition to the *Comital Flora*."—J. Chapple.

Lepidium campestre Br. The Crumbles, Eastbourne, E. Sussex, v.-c. 14, June 13th, 1936.—H. Foster.

Viola agrestis Jord. [Ref. No. 1448.] Barbury, N. Wilts, v.-c. 7, November 27th, 1935.—J. D. Grose. "In my opinion this gathering is *V. agrestis* Jord., but, being gathered very late in the season, it is untypical. The long straggling stems have started secondary growth from the nodes."—P. M. Hall. "*V. agrestis* Jord. Quite characteristic of the autumn form of this species."—Hilda Drabble.

Viola ——. [Ref. No. 864.] Sandy field near Swaffham, West Norfolk, v.-c. 28, August 1st, 1936.—E. S. Edees. "*V. segetalis* Jord." —P. M. Hall. "*V. segetalis*."—Hilda Drabble.

Viola ——. [Ref. No. 865.] Sandy field near Swaffham, West Norfolk, v.-c. 28, August 1st, 1936. Gathered from the same field as No. 864.—E. S. Edees. "*V. segetalis* Jord., f. *obtusifolia* (Jord.) Drabble. Young plants.—P. M. Hall. "*V. segetalis*, f. *obtusifolia*." —Hilda Drabble.

Viola ——. [Ref. No. 863.] Winterton, North Lincs, v.-c. 54, August 8th, 1936.—E. S. Edees. "*V. segetalis* Jord., f. *obtusifolia*

(Jord.) Drabble."—P. M. Hall. "*V. segetalis* Jord., f. *obtusifolia* (Jord.) Drabble."—Hilda Drabble.

Viola ruralis Boreau. Field by Coombe Wood, Oxon, v.-c. 23, May 1st, 1936. The name kindly supplied by Mr P. M. Hall.—J. Chapple. "*V. ruralis* Jord. They are very uniform and in my opinion typical of this species."—P. M. Hall. "Typical *V. ruralis*."—Hilda Drabble.

Viola Deseglisei Jord. Stubble field, Sowerby, near Thirsk, N.E. Yorks, v.-c. 62, May 6th, 1936.—C. M. Rob, det. Mrs H. Drabble. "I think the name *V. Deseglisei* Jord. fits these best, but they are very young."—P. M. Hall.

Silene maritima With. Coire Mhusgain, Glen Nevis, Westerness, v.-c. 97, July 5th, 1936. Occurred on rocks about gullies at between 1500-2000 feet altitude.—E. C. Wallace.

Silene gallica L. Waste land, Southampton, S. Hants, v.-c. 11, June 1935.—J. W. Long. "Although given specific rank by Linnaeus (*Sp. Plant.*, 416-7, 1753) and some earlier authors, most recent continental authorities agree that *S. anglica*, *gallica*, and *quinquevulnera* cannot be retained as separate species. Indeed Rouy and Foucaud (*Fl. France*, *3*, 116-120, 1896) reject *anglica* and *gallica* altogether as primary divisions of their aggregate *gallica*, adopting instead as varieties the complicated series of 'species' proposed by Jordan and Fourreau (*Brev. Plant. nov.*, 1866-8). It would appear that British plants cannot easily be referred to these continental microspecies, and in all probability the polymorphic *S. gallica* aggr. tends to form local races in various parts of its range. The British series as known to me can conveniently be arranged in three series as follows, it being understood that many intermediates and minor variations occur, and that extreme examples are not always to be found. *S. gallica* L. *sensu amplo*: (1) var. *sylvestris* (Schott) Asch. & Graeb., *Fl. Nordostdeutschen Flachlandes*, 298, 1898; *S. eu-gallica* Syme; *S. anglica*, var. *stricta* Bromfield, *Fl. Vectensis*, 63, 1856. Stem simple, or with a few erect branches. Petals large (lamina at least 5 × 5 mm.), pale pink or rose, rounder and more entire than in the following. Fruiting pedicels shorter than the calyx, erect. This is a rare form which I have only seen growing in the Channel Isles. It probably also occurs as a permanent plant of the Isles of Scilly, and as a casual elsewhere. It is well illustrated in Reichenbach, *Icones*, t. cclxxii, fig. 5055, and also in Dillenius, *Hortus Elthamensis*, 419, t. cccx, fig. 399, 1732, as 'Viscago hirta Gallica, flore parvo carneo, petalis integris.' (2) var. *anglica* (L.) Mert & Koch. Stem branched, spreading. Petals small, dingy white, yellowish or pale pink. Lower fruiting pedicels exceeding the calyx, often spreading or even reflexed. The form with dingy white flowers is commonest in E. and S.E. England, that with smaller pale purple flowers in S.W. England. It is illustrated in Reichenbach, *l.c.*, t. cclxxiii, fig. 5056, and Dillenius, *l.c.*, 417, t. cccix, fig. 398, as 'Viscago cerastei foliis, vasculis pendulis.' (3) var.

quinquevulnera (L.) Mert. & Koch. Closely allied to var. *anglica*, but petals with a deep crimson spot near the base, and sometimes larger. This probably hybridises with *anglica* as intermediates often occur where they grow together. According to Withering, Smith, and other authors, *quinquevulnera* was once extensively grown in English gardens for its ornamental flowers. I should consider Mr Long's specimens best named as var. *sylvestris* (Schott) A. & Gr., but not so typical as the Jersey plants."—J. E. Lousley.

Silene dichotoma Ehrh. Seedfield, Catton, near Thirsk, N.E. Yorks, v-.c. 62, September 16th, 1936.—C. M. Rob. "Yes."—A. J. Wilmott.

Cerastium erectum (L.) C. & G. [Ref. No. 1505.] Savernake Forest, N. Wilts, v.-c. 7, May 19th, 1936.—J. D. Grose.

Cerastium cerastoides Britton. Ben Nevis, above 3500 feet, Westerness, v.-c. 97, July 10th, 1936.—R. Mackechnie and E. C. Wallace.

Stellaria media Vill., var.? [Ref. No. 1504.] Okus, N. Wilts, v.-c. 7, May 18th, 1936.—J. D. Grose. "No variety, but a drawn-up condition."—C. E. Britton. "A frequent form of *S. media*, not a variety." —J. E. Lousley.

Arenaria peploides L. Hornsea, S.E. Yorks, v.-c. 61, July 17th, 1936.—Coll. R. Bulley, comm. Nottingham Natural History Museum.

Spergularia media (Pers.) Presl. Frieston shore, N. Lincs, v.-c. 54, August 16th, 1936.—Coll. R. Bulley, comm. Nottingham Natural History Museum.

Spergularia Bocconei (Sol.) Steud.? Tor Cross, S. Devon, v.-c. 3, August 14th, 1936. This plant I found growing by the road side at Tor Cross, and in greater quantity also by the road side, close to the sea, at Bee Sands. At first I took it to be *Bocconei* but subsequent examination showed that it differed from that species by not having broadly triangular, dull bracts, but instead, possessing bracts rather long, narrow and lanceolate, and not dull. In all other respects it matches plants of *Bocconei* in Herb. Druce from the Channel Isles, Cornwall and Suffolk, and appears to me to be the same as the plant from Countess Wear, Exeter, W.S.M. D'Urban (see *B.E.C. 1927 Rep.*, 390 (1928)) which was thought to be *Bocconei* by C. E. Salmon, Dr Druce and the "British Museum." An important character to which I failed to give notice when collecting is the size and colour of the flowers. In Mr Pugsley's account of *S. Bocconei* in *Journ. Bot.*, 328-9, 1914, he says "the corolla characters of the British Spergularias are usually constant and sufficient alone to determine the species . . . in *rubra* the corollas are pale lilac or lavender and in *atheniensis* (*Bocconei*) purplish-pink and concolorous." Judging from the dried material, the colour of the flowers in these specimens is clearly of a purplish-

red and certainly not pale lilac or lavender. This seems to point to their best being put under *Bocconei*, rather than *rubra*.—J. CHAPPLE. "This does not show the characteristic secund inflorescence of *Bocconei* and must, I think, be a very glandular form of *S. rubra*. On my sheet some of the petals have retained their colour and are the clear pale rose- (not purplish-) pink characteristic of *rubra*. The capsules are rather longer than the sepals: though most of the authorities say of *rubra* 'capsules not exceeding sepals,' some say 'equalling or slightly longer'."—P. M. HALL.

Linum angustifolium Huds. Cliffs, near Barry, Glamorgan, v.-c. 41, June 17th, 1936.—Coll. A. E. WADE, comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Erodium moschatum L'Hérit. Sea wall, near Rumney, Monmouth, v.-c. 35, July 9th, 1936.—Coll. A. E. WADE, comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Ononis repens L. Hornsea, S.E. Yorks, v.-c. 61, July 17th, 1936.—Coll. R. BULLEY, comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Medicago hispida Gaertn. Waste ground, Splott, Cardiff, Glamorgan, v.-c. 41, September 1936.—Coll. R. L. SMITH, comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Trifolium pratense L. Waste land, Southampton, S. Hants, v.-c. 11, June 1936.—J. W. LONG.

Trifolium striatum L. Pevensey Bay, E. Sussex, v.-c. 14, June 24th, 1936.—H. FOSTER. "Some pieces of *T. scabrum* intermixed."—E. C. WALLACE.

Vicia angustifolia (L.) Reichard, var.? Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41, June 16th, 1936.—Coll. A. E. WADE, comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES. "Will not this come under var. *segetalis* Koch.?"—J. CHAPPLE.

Lathyrus Nissolia L. Polegate, E. Sussex, v.-c. 14, June 16th, 1936. —H. FOSTER.

Rubus L. For critical work two average panicles (if possible showing both flowers and fruit) and three representative pieces of stem (with good leaves) cut from the *middle* of the first year shoot are generally desirable. Moreover, the panicles and stem pieces should come from the same root. It would be of great assistance to the student and referee if collectors would trace the first and second year stems right down to the crown of the root and state on the label that this has been done.—W. C. BARTON.

Rubus affinis W. & N. [Ref. No. 665.] *Teste* Rev. W. Moyle Rogers. "The Moors," Alphamstone, N. Essex, v.-c. 19, July 5th, 1936. Petals white, stamens much exceeding styles, sepals patent in flower, loosely reflexed later. Named from the first gathering made August 2nd, 1914. Rev. W. M. Rogers said *in litt.*, November 1914:—"The first Essex specimen I have seen and a N.C.R. for v.-c. 19." These specimens supplement the supply distributed in 1915.—G. C. Brown. "Name correct. Stem pieces poor."—W. C. Barton and H. J. Riddelsdell. "Correct."—W. Watson.

Rubus carpinifolius W. & N. [Ref. No. 2513.] Middlewick Rifle Ranges, East Donyland, N. Essex, v.-c. 19, July 8th, 1936. Petals pure white, long clawed, stamens much exceed styles, sepals patent in flower and after. One of the commonest brambles on the ranges and apparently this gathering is identical with my Nos. 1971 and 2010 of July 1922 and 1923, which Rev. H. J. Riddelsdell passed as correct and N.C.R. for v.-c. 19.—G. C. Brown. "*R. carpinifolius* Wh. Stem and leaves poor."—W. C. Barton and H. J. Riddelsdell. "Correct."—W. Watson.

Rubus mercicus Bagn. Spring Wood, Apley, S. Lincs, v.-c. 53, September 5th, 1932.—Coll. H. Fisher, comm. Nottingham Natural History Museum. "Yes; with prickles straighter, fewer and shorter-based than in Bagnall's own specimens."—W. C. Barton and H. J. Riddelsdell. "No, this is *R. villicaulis* Koehl. Attention to the long prickles, the long hair on the stem, the presence of long acicles and long-stalked glands, the broad and cordate base of the leaflets, the pink petals, etc., amply serve to distinguish this from *R. mercicus*. The Handbook description under the name of *R. villicaulis* is of another species (*R. insularis* Aresch.), to which is perhaps due the general failure in this country to recognise *R. villicaulis*. Compare *B.E.C. 1931 Rep.*, 761 (1932)."—W. Watson.

Rubus Winteri Focke. [Ref. No. 2514.] Danbury Common, S. Essex, v.-c. 18, July 26th, 1936. Petals pink, stamens equalling styles, sepals patent in flower, reflexed later. From the bushes examined in the company of Mr William Watson in July 1935 and in better condition than at that time. I think that there is no doubt of the identification. —G. C. Brown. "No. The panicle is almost unarmed; apparently a hybrid of *rusticanus*."—W. C. Barton and H. J. Riddelsdell. "This is *R. macrothyrsus* Lge. × *R. ulmifolius* Schott. Points against *R. Winteri* are the short stamens and unarmed rachis, the short stalk and rather short point of the terminal leaflet, of which also one misses the deep sharp teeth and roundish or formal obovate-cuneate shape proper to *Winteri*. Both *R. macrothyrsus* and *R. ulmifolius* were close by."—W. Watson.

Rubus ——. Newton Abbot, S. Devon, v.-c. 3, July 20th, 1936.—R. J. Burdon. "*R. rusticanus* Merc. crossed probably with a local

form of *R. propinquus* or *R. Winteri* Focke. We have seen no true *R. Godronii* Lec. & Lam. from the British Isles; the plants included by Rogers and others under this name have not yet been worked out satisfactorily."—W. C. Barton and H. J. Riddelsdell. "*R. heteromorphus* Rip., a form—not a hybrid—of *R. ulmifolius* Schott. It is fairly common and well distributed."—W. Watson.

Rubus Drejeri G. Jensen? [Ref. No. 2516.] Middlewick Rifle Ranges, East Donyland, N. Essex, v.-c. 19, July 8th, 1936. Rather young, but I think a form of *R. Drejeri*. The stem-pieces are weak and the panicle leaves very numerous, but would seem best placed here. Petals pure white, sepals patent in flower then loosely reflexed, stamens about equalling styles.—G. C. Brown. "Panicle too young and material too poor for certain determination or critical comment."—W. C. Barton and H. J. Riddelsdell. "*R. scaber* Whe., the short-stamened English form described by Rogers under the name of *R. teretiusculis*."—W. Watson.

Rubus Murrayi Sudre (*R. adornatus* Rogers). [Ref. No. 2515.] Danbury Common, S. Essex, v.-c. 18, July 26th, 1936. Petals white, very small, the white stamens slightly exceed the styles. Sepals patent after flowering then gradually rising and clasping fruit. I think almost certainly *Rubus Murrayi* Sudre, which, however, has not been certainly identified at Danbury, but I have it from Galleywood Common, v.-c. 18, and Great Lotham and Tiptree Heath in v.-c. 19. In facies, it is close to *R. Marshalli*, var. *semiglaber* Rogers, as found at Tiptree Heath, but the armature is hardly sufficiently strong.—G. C. Brown. "These sheets come under *R. adornatus* of Rogers' *Handbook*, but the material is poor; leaf-toothing is abnormal and many panicles are misgrown (with irregular branching, thickening of rachis and abnormal hair)."—W. C. Barton and H. J. Riddelsdell. "This is *R. hylonomus* L. & M., a form of the *R. serpens* group. See *B.E.C. 1930 Rep.*, 435 (1931), where I have given references to notices of it in English authors. It is a frequent bramble in the higher parts of the Weald of Kent and Sussex. I suppose that it is the Kentish bramble described at the top of page 90 of Rogers' *Handbook*, for which Focke suggested the name *R. minutiflorus* P. J. Muell."—W. Watson.

Rubus Bellardi W. & N. Terrington Carr, N.E. Yorks, v.-c. 62, August 16th, 1936.—C. M. Rob. "*R. Bellardi* Wh. & N. grows in quantity on the edge of Terrington Carr, which I visited in company with Miss Rob in 1934. It hybridises there with other species, and some of the hybrids (*e.g.*, × *mucronatus*) were included in this gathering."—H. J. Riddelsdell. "The hybrids have been removed and the sheets distributed we consider to be *R. Bellardi*."—W. C. Barton and H. J. Riddelsdell. "Yes, from the station in which it was first discovered in Britain, and which furnished the specimen for *Engl. Bot. Suppl.*, 2883."—W. Watson.

Sorbus sp. [Ref. No. 1842.] Roadside, Little Haldon, near Bishopsteignton, S. Devon, v.-c. 3, July 19th, 1936, in immature fruit. This has been recorded in the Report of the Botanical Section of the Devonshire Association as *S. Aria*, but it appears to be a subspecies of the aggregate *S. latifolia* (Lam.) Pers. It grows as a small tree or bush not more than 20 feet in height and there are a number of specimens with a few saplings all quite uniform.—P. M. Hall. "This is the Devonshire form of *S. latifolia* (Lam.) Pers."—A. J. Wilmott.

Sorbus latifolia Lam. Small tree in wood, Newton, near Chester, Cheshire, v.-c. 58, August 12th, 1936.—C. Waterfall. "This is the form of '*Sorbus latifolia*' commonly distributed by nurserymen; I do not yet know its origin."—A. J. Wilmott.

Sorbus torminalis Crantz. Wood near Wootton, Isle of Wight, v.-c. 10, September 1934.—J. W. Long.

Saxifraga spathularis Brot. Rocks in wood near Ballyrisode, West Cork, v.-c. H. 3, May 17th, 1936.—P. M. Hall.

Callitriche stagnalis Scop. A cushioned growth on damp mud, Penhallow, Perranzabuloe, W. Cornwall, v.-c. 1, May 20th, 1936.—F. Rilstone.

Callitriche truncata Gussone, var. *occidentalis* Rouy. Ditch near the Arun, Burpham, W. Sussex, v.-c. 13, June 14th, 1936.—E. C. Wallace. "A very important and interesting discovery. This plant was found by Borrer in a deep ditch near Amberley Castle in 1826, but repeated search by many botanists has failed to rediscover it at this station. Apparently Hemsley subsequently found it somewhere in the Arun valley, but I have been unable to trace the exact locality or date, the inclusion of the record by Arnold (*Fl. Sussex*, 1907) being apparently based on Hemsley, 'An Outline Fl. Sussex,' p. 16 (*Journ. Bot.*, Suppl., 1875), where, however, there is no statement that Hemsley himself found the plant. Mr Wallace's discovery is all the more important as the habitat is fairly still (though tidal) water where if left undisturbed at the right time of the year it may well fruit. The W. Kent station near Westerham is a parallel example of the rediscovery of *C. truncata* in an area after a long interval. Specimens from G. E. Smith in Herb. Borrer from Westerham are dated 1837, and it was not until 1886 that it was refound in the district by Beeby (*Journ. Bot.*, 1886, 346, and *Proc. Linn. Soc.*, *3*, November 18, 1886)—it still persists in at least two places in the same stream (*B.E.C. 1933 Rep.*, 762, 1934). The Amberley plant was first known as *C. autumnalis*, and was fully described and illustrated under the correct name by Trimen in *Journ. Bot.*, 1870, 154. Although Druce presumed that all British specimens of *truncata* should be placed to the variety *occidentalis* (*B.E.C. 1912 Rep.*, 162, 1913) because those specimens which he had seen in fruit had sessile or subsessile fruits, it seems rather unwise to assume that this must always

be the case. Rouy's ' race ' is a very slight one based entirely on the absence of long peduncles and the more robust vegetative parts, and in view of the general lack of stability of these characters in the genus it seems better not to adopt it for our rarely fruiting British material. Pearsall gave an account of *C. truncata* in *B.E.C. 1934 Rep.*, 870-871, 1935. To the distribution as there given may be added N. Somerset, v.-c. 6 (*Journ. Bot.*, 1923, 314). A record of the Notts localities is to be found in *B.E.C. 1918 Rep.*, 380, 1919, and notes on the Irish records in *Journ. Bot.*, 1897, 147, and *Irish Naturalist*, 1897, 134 and 219. It still exists at Chard Reservoir whence I have recent specimens from A. W. Graveson."—J. E. Lousley.

Epilobium hirsutum L. × *parviflorum* Schreb. (growing with the putative parents). Groby stone-quarry, Leicester, v.-c. 55, August 29th, 1936. All these specimens came from one very large plant. Stigma 4-cleft, lobes a little recurved but not nearly so much as in *hirsutum*. Rachis densely glandular and with no appressed hairs. The presence of *hirsutum* is strongly shown by the irregular, sharp, sometimes hooked toothing of the leaves.—J. Chapple. " A very variable hybrid of which there were several in the quarry. These specimens come from one bushy plant branched at the base."—G. M. Ash.

Epilobium hirsutum L. × *tetragonum* L. em. Curtis (growing with the putative parents). Groby stone-quarry, Leicester, v.-c. 55, August 29th, 1936. All these specimens came from one very large plant. Stigma intermediate, lobes recurved as in *hirsutum*. The presence of *hirsutum* is shown in the stolons, in the hooked teeth of the leaves; *tetragonum* by the shape of the leaves and by the silky adpressed pubescence and the long pods.—J. Chapple. " I was with Mr Chapple at the stone-quarry near Groby and among a very large number of *Epilobium* plants and hybrids we only noticed one specimen of this rare hybrid. All the sheets are from one large bushy plant. It is the only convincing example I have seen from this country. There can, I think, be no doubt as to the parents but the following points are perhaps worthy of notice. The flowers are rather smaller than in the pure *E. hirsutum* growing nearby: the stigmas very shortly divided on long styles. The pubescence consists of a mixture of ascending hairs and shorter adpressed hairs. No glands are present, the eglandular *E. tetragonum* being dominant in this case over the other parent. Faint lines are noticeable on the stem from the strongly decurrent lower leaves; even the upper leaves of the inflorescence (bracts) are slightly decurrent as we should expect. The leaves are much narrower than in pure *E. hirsutum* with numerous hooked acute teeth. Most of the seeds are abortive."—G. M. Ash.

Epilobium tetragonum L. em. Curtis. Gravel quarry, Farnham, Surrey, v.-c. 17, September 3rd, 1936. Mr E. W. Swanton of the Haslemere Educational Museum informs me that the mould present on these

and the other plants from this locality is *Oidium Erysiphoides* Fr.—G. M. Ash.

Epilobium Lamyi Schultz. Gravel quarry, Farnham, Surrey, v.-c. 17, September 3rd, 1936.—G. M. Ash.

Epilobium Lamyi Schultz × *tetragonum* L. em. Curtis. Gravel quarry, Farnham, Surrey, v.-c. 17, September 3rd, 1936. Always a very difficult hybrid to be sure about. Some of the plants had very large flowers over 10 mm. in length as compared with 5-8 mm. for pure *E. Lamyi* and about 4-6 mm. for pure *E. tetragonum*.—G. M. Ash.

Epilobium obscurum Schreb. × *palustre* L. Marsh near Elstead, Surrey, v.-c. 17, September 8th, 1936. These sheets are from four or five strong plants growing amongst masses of the two parents. They were very noticeable by the larger rosier flowers. The pubescence is intermediate; numerous adpressed hairs throughout with many glandular spreading hairs on the base of the calyx and several scattered down the capsules.—G. M. Ash.

Epilobium obscurum Schreb. × *parviflorum* Schreb. Wood, Brook, Godalming, Surrey, v.-c. 17, August 27th, 1936. Although all the plants distributed have perfect intermediate stigmas there were two plants in the same locality with quite entire stigmas but which were undoubtedly this hybrid. This is interesting since Mr Chapple pointed out to me at Guildford quarry one or two plants of undoubted *E. parviflorum* × *tetragonum* with entire stigmas amongst several of the more normal form with partly divided stigmas. As is always the case with the hybrid distributed, practically all the seeds are abortive.—G. M. Ash.

Epilobium lanceolatum Seb. & Maur. Newton Abbot, S. Devon, v.-c. 3, July 22nd, 1936.—R. J. Burdon.

Epilobium montanum L. × *parviflorum* Schreb. Wood, Brook, Godalming, Surrey, v.-c. 17, August 27th, 1936.—G. M. Ash.

Bupleurum fruticosum L. [Ref. No. 4245.] Horton Kirby, W. Kent, v.-c. 16, August 22nd, 1936.—C. E. Britton. "A native of Southern Europe, North Africa, and Syria, this plant has become naturalised in many parts of Europe, and in several English stations. Near Wynd's Point, Malvern Hills, Worcester, v.-c. 37, it was observed prior to 1909 (Amphlett & Rea, *Botany of Worcester*) and was still there in 1934. At Slapton, S. Devon, it persisted for at least ten years (*B.E.C. 1920 Rep.*, 125, 1921). It was formerly a common plant in cultivation in herbal gardens in this country for its medicinal properties."—J. E. Lousley.

Daucus Carota L. Near Old Colwyn, Denbigh, v.-c. 50, July 20th, 1936.—C. Waterfall.

Galium sylvestre Poll. Malham, Mid-W. Yorks, v.-c. 64, June 2nd, 1936.—H. Foster. "Gathered in an immature condition. Flowers in bud only."—C. E. Britton.

Galium debile Desv. [Ref. No. 4247.] Chudleigh Knighton Heath, S. Devon, v.-c. 3, August 25th 1936.—Coll. G. T. Fraser, comm. C. E. Britton. "The only sheet of this gathering which I have seen bears specimens of abnormal growth with leafy shoots growing out from the nodes from which the flowering branches arise. They are thus less convincing than material which has been gathered under this name from the New Forest. Since the work containing Desvaux's original description is a scarce one the following extract should be useful:—'Ses feuilles au nombre de quatre à six par verticilles, sont lineaires, obtuses, comme mucronées. Les angles des tiges sont hérissés d'asperités, ce qui le fera facilement reconnaitre, et distinguer du *G. palustre*, dont il s'éloigne encore par les ombellules de ses fruits qui ne sont par divariques' (*Obs. pl. Angers*, 134, 1818). He also states that it does not turn black in drying. *G. debile* looks quite distinct from the taller, stricter *G. constrictum* Chaubart, although several authors following Boreau (*Fl. Centre*, *2*, 307, 1857) have treated them as synonymous. Perhaps owing to the influence of Boreau's then recently published work, J. G. Baker gave these names as synonyms for a plant which he gathered near Thirsk, though from his descriptions (*Phytologist*, *3* (N.S.), 54-5, 1859, and *Rep. Thirsk B.E.C.*, 6, 1859), it is doubtful whether he really found either of them. Druce (*B.E.C. 1925 Rep.*) reported *G. debile* from Britain citing Lyndhurst and Hatchett's Pond, New Forest, as stations. He quotes Willkomm and Lange, adding immediately 'The habit is much that of *Asperula cynanchica*.' But Lange remarks in *Prod. Hisp.*, *2*, 322, 1870, 'habitus Asperulae cynanchicae' not of the species as a whole, but of his var. (α) *humile*, as distinguishing it from his var *β congestum* Gr. & Godr. (*G. constrictum* Chaub.; *G. debile* as illustrated in Reichenbach, *Icones*, t. 1195). Lange described his var. *humile* as '*humilius* (4-8″ 1), caulibus diffusis, internodiis brevioribus,' which agrees with the New Forest plant as also does a specimen of the exsiccata he cites which is in Herb. Kew. The specimens in that Herbarium have been arranged by Messrs Airy-Shaw and Sandwith, and give a very clear idea of the range of these difficult micro-species."—J. E. Lousley.

Valerianella dentata (L.) Poll. Tor Cross, S. Devon, v.-c. 3. August 22nd, 1936. Growing with this were a few specimens of the var. *mixta* (L.) and *Valerianella rimosa* Bast.—J. Chapple.

Anaphalis margaritacea, var. *subalpina* A. Gray. Railway embankment, Llanishen, Glamorgan, v.-c. 41, August 1935.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales.

Anthemis tinctoria L. Cultivated, West Byfleet ex Godalming, Surrey, v.-c. 17, 1936.—Coll. Lady Davy, comm. J. Chapple. "These

specimens are from self-sown seedlings of the well-known discoid (var. *discoidea* DC.) *Anthemis tinctoria* from Godalming, a piece of which Lady Davy planted in her garden at West Byfleet. The white-rayed specimens are from a plant one foot from the original plant, grown in shade. The yellow-rayed specimens are from a plant one and a half feet from the original plant, grown in shade. The discoid specimens are from another plant growing in greater sun. It should be remarked that the original parent plant in Lady Davy's garden this year produced white-rayed florets, and at Godalming this year also, I saw a plant with white rays and one with yellow rays growing among a larger proportion of discoid plants. This is the first occasion on which I have seen rayed plants at Godalming, where on my previous visits the colony has remained uniformly discoid. Koch, *Syn. Fl. Germ. et Helv.*, ed. iii, 322, says *A. tinctoria* varies in having either yellow or white rays. These forms seem to be induced by the greater or less amount of sun they are subject to. I must apologise for not being able to supply in all the sheets a specimen of the typical plant with yellow rays."—J. Chapple.

Senecio integrifolius Clairv. The Downs, Eastbourne, E. Sussex, v.-c. 14, June 26th, 1936.—H. Foster.

Centaurea nemoralis Jord., var. *diversifolia* C.E.B. Waste ground, Cathays Park, Cardiff, Glamorgan, v.-c. 41, August 1936.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales.

Centaurea Calcitrapa L. The Crumbles, Langney, E. Sussex, v.-c. 14, July 6th, 1936.—H. Foster.

Picris spinulosa Bertol. [Ref. No. 4246.] Horton Kirby, West Kent, v.-c. 16, August 22nd, 1936.—C. E. Britton. [Ref. No. 4243.] Longfield, West Kent, v.-c. 16, August 16th, 1936.—Coll. A. Beadell, comm. C. E. Britton. "See *Journ. Bot.*, 1936, 354, for further field notes on this plant."—E. C. Wallace. "The single specimen of this gathering which I have seen apparently only differs from the normal *P. hieracioides* of this country in having an umbellate inflorescence and the indumentum on the leaves being very soft. I have gathered very similar plants at Wotton-under-Edge, W. Gloucester, v.-c. 34. The specimen is quite unlike two sheets from the same collector [Ref. No. 4218] in *Herb. Mus. Brit.* which are similarly named and were distributed through this Club last year. These have a subracemose inflorescence extending some way down the stem, and rough coarse leaves. None of the examples of Ref. No. 4218 or 4243 which I have seen could be considered identical with the plant known as *P. spinulosa* from Dalmatia, Macedonia, or S. Italy."—J. E. Lousley.

Taraxacum anglicum Dahlst. Marston Meadows, Oxford, v.-c. 23, May 13th, 1936. In the *Brit. Plant List*, ed. ii, by an error, no doubt, this is wrongly placed in the sect. *Vulgaria* D. Its correct position is

in the sect. *Palustria*. See *B.E.C. 1919 Rep.*, 566 and 567 (1920), and *Fl. Oxon*, ed. ii, 264.—J. CHAPPLE.

Lactuca Serriola L. Waste ground by maltings, Hythe Quay, Colchester, N. Essex, v.-c. 19, September 6th, 1936. Not noticed for some years but abundant this year.—G. C. BROWN.

Phyteuma orbiculare L. The Downs, Eastbourne, E. Sussex, v.-c. 14, June 26th, 1936.—H. FOSTER.

Vaccinium Myrtillus L. × *Vitis-Idaea* L. = *V. intermedium* Ruthe. [Ref. No. 22.] Moor, Ringinglow, near Sheffield, Derbyshire, v.-c. 57, June 27th, 1936. A detailed description of the locality is given in *B.E.C. 1928 Rep.*, 629 (1929), but Ringinglow is misspelt Rivington. The hybrid does not appear to flower freely and the corollas had all dropped when the gathering was made. There is some doubt as to whether this locality is in Yorkshire or Derbyshire. Mr Gourlay (*loc. cit.*) determined it as just within v.-c. 63, but the half-inch Ordnance Survey shows it as well within Derbyshire. The hybrid probably occurs on both sides of the boundary as the moors hereabouts are dominated by Cowberry and Bilberry.—W. A. SLEDGE. "These excellent specimens of one of our most convincing natural hybrids exhibit ample evidence of both parents. They differ from *V. Myrtillus* in the thicker firmer leaves with more prominent venation, in the less angular section of the branches, and in the terminal arrangement of the flowers, two of which are present on my specimen. From *V. Vitis-Idaea* they are easily distinguished by the very different habit and the almost total absence of punctate dots on the undersurface of the serrulate, more acute leaves. The hybrid was described as a species by Ruthe (*Fl. Mark Brandenburg*, 377, 1834), and first published for Britain by R. Garner in *Science Gossip*, 248, figs. 134-5, 1872, and *Proc. Linn. Soc.*, 31, 1871-2. Unaware of this record the plant was again described as new to Britain by N. E. Brown from Cannock Chase specimens (*Journ. Linn. Soc.*, *24*, 125, t. 3, 1888) and the illustration there given is of a much larger-leaved plant than that now contributed by Dr Sledge and similar to hybrids seen in two localities in the Chase in 1936 by R. C. L. Burges and myself. These large leaved plants have dimorphic foliage—the upper leaves resembling those of *Myrtillus* and the lower recalling rather those of *Vitis-Idaea*. On the other hand microphyllous forms with much smaller leaves than those of the present gathering are recorded. Bennett recorded the first Scottish specimens from Caithness in *Annals Scot. Nat. Hist.*, 249, 1904, and Gourlay in *Trans. Bot. Soc. Edinb.*, *27*, 327, 1919, published excellent field notes, reviewed in *B.E.C. 1919 Rep.*, 567 (1920), where Druce added an account of the distribution to date. Further notes, and photographs of seedling plants grown from seed, appear in *Trans. Bot. Soc. Edinb.*, XXX, 131, t. 11, 1929, and *B.E.C. 1928 Rep.*, 629 (1929), repeats the directions for the locality near Sheffield there given. The preference of the hybrid for disturbed ground is remarkable and not yet adequately explained. Hybrid forms similar

to ours are not uncommon in North Germany, and an account of the plant in Sweden will be found in *Bot. Not.*, 1894, 120."—J. E. Lousley.

Arctostaphylos alpina Spreng. Beinn Chlianaig, altitude c. 2000 feet on dry slopes, Glen Spean, Westerness, v.-c. 97, July 13th, 1936.—R. Mackechnie and E. C. Wallace.

Erica ciliaris L. [Ref. No. 1281.] Ventongimps, W. Cornwall, v.-c. 1, July 24th, 1935.—J. D. Grose.

Limonium binervosum C.E.S., var. [Ref. No. 1901.] Chalk cliffs and foreshore near Swyre Head, Dorset, v.-c. 9, August 2nd, 1936. Specimens gathered in this locality by Mr R. D'O. Good in 1935 seemed to agree very well with the description of var. *intermedium* Druce, but this year's plants do not agree quite so well, having some of the branches barren.—P. M. Hall. " Salmon's valuable paper in *Journ. Bot.*, 1903, 69-71, should be consulted for a careful statement on the variations of this plant in Britain, in which it is said that ' Almost every locality of *L. occidentale* in Britain seems to possess a form slightly different from the plants in another locality.' Mr Hall's plant resembles some of the *binervosum* found on the chalk cliffs at St Margaret's Bay, E. Kent, and yet both differ from the same species as found at Lulworth Cove only two miles east of Swyre Head!"—J. E. Lousley. " This is not remarkably extreme in any direction; there are far more remarkable specimens in *Herb. Mus. Brit.* from near Lulworth."—A. J. Wilmott.

Lysimachia thyrsiflora L. Leckby Carr, N.E. Yorks, v.-c. 62, June 24th, 1936.—C. M. Rob.

Trientalis europaea L. Moseley Wood, Cookridge, Mid-West Yorks, v.-c. 64 (a new station), May 21st, 1936, and fruit, July 29th, 1936.—H. Foster. " The fruiting specimens are very useful and welcome."—E. C. Wallace.

Centunculus minimus L. A crowded, up-drawn growth with *Juncus bufonius*, *Scirpus setaceus*, and similar plants in a boggy meadow, Lambriggan, Perranzabuloe, W. Cornwall, v.-c. 1, July 4th and 11th, 1936.—F. Rilstone.

Anchusa sempervirens L. Knaresborough, Mid-West Yorks, v.-c. 64, May 8th, 1936.—H. Foster.

Myosotis sylvatica (Ehrh.) Hoffm. Beech-wood near Henley, Oxon, v.-c. 23, June 1936. These specimens are, I believe, from the same locality as that discovered by Messrs Sandwith and Milne-Redhead (see *B.E.C. 1934 Rep.*, 833 (1935)), where it is described as " appearing truly native." If this is so, it would be a new native record for v.-c. 23 for the other records for the county can lay no claim to being indigenous (see *B.E.C. 1930 Rep.*, 518 (1931)). The plant was growing in considerable quantities over a limited area and in a situation not unlike that in

which it occurs at Riever (see *Fl. Berks*, 352) and certainly gives one the appearance of being native. But against this one has to remember that this wood was particularly well-known to the late Dr Druce over a long period of years, and that recently *Epilobium adenocaulon* has been found in the same wood not far from the *Myosotis*, and nearby is a spot where many aliens have been found. Incidentally the Berkshire record for this plant, Riever, and all others for this place in the *Fl. Berks*, must be transferred to Wiltshire. Riever is in S. Wilts, v.-c. 8, not in Berkshire.—J. Chapple. "Correct."—A. E. Wade. "The last part of Mr Chapple's note requires modification. Sheet 112 of the 1 inch = 1 mile O.S. map shows "Rivar," "Rivar Hill" and "Rivar Down," near which are several woods. These places are certainly well within S. Wilts, but this is not where *M. sylvatica* grows, or at least where I have seen it. *M. sylvatica* grows along the southern margin of the wood further east, which is about 1½ miles west of Coombe Gibbet, and whose western edge forms the Berks-Wilts boundary. This wood has no name on the map—the word 'Tumulus' is printed across it—but I have always understood that this is 'Riever Wood.' This locality is in Berkshire and it is desirable to ascertain whether there is a Rivar Wood as well as a Riever Wood in this district. It should be noted that there may be some uncertainty with regard to the 'Riever Wood,' Berkshire record of *Chrysosplenium alternifolium*. I have not seen this in this locality, which is, I understand, in (or near) the small copse lying to the north of 'Riever Wood.' As the county boundary runs along the eastern side of this copse, the plant would be in Wilts if it grew actually in the copse, but in Berks if in the wet ground east of the copse. This is another detail which requires investigation: the use of the 1/2500 O.S. sheet would be advisable."—P. M. Hall.

Myosotis collina Hoffm. Stonesfield, Oxon, v.-c. 23, May 7, 1936.—J. Chapple. "Correct. *M. collina* varies much in habit and may be erect, simple or branched, or decumbent and branched. The variation appears to depend upon local conditions and the age of the plant."—A. E. Wade.

Lithospermum purpureo-caeruleum L. Cliffs near Barry, Glamorgan, v.-c. 41, June 17th, 1936.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales.

Cuscuta suaveolens Ser. Carrot field, Brafferton Station, N.E. Yorks, v.-c. 62, September 29th. 1935.—C. M. Rob. "Yes, agrees well with authentic British, Continental and Chilean material at Kew. The history of this species from its first discovery in Britain in 1851 is dealt with by W. B. Hemsley in *Journ. Bot.*, 1908, 241-4, accompanied by full synonomy and a plate. The two stamens, however, are shown as joined at the base, whereas apparently they should be free. Of recent years the records of this plant have become more frequent, and it has been noticed at Cardiff (Pettigrew, *B.E.C. 1919 Rep.*, 668; Hb. Kew; *Kew Bulletin*, 391-2, 1919), Skipton, Yorks (J. N. Frankland, September

1933), and Stoke Bardolph, near Nottingham (E. Pethybridge, October 1925, Hb. Kew). The usual hosts are Lucerne and Red Clover, but at Cardiff it occurred on Carrots and Onions, at Skipton on Dock, and at Reigate on *Prunella vulgaris*, *Cnicus arvensis*, and *Ranunculus repens*. The specimens from C. E. Salmon from the last named station (September 23rd, 1900) in Herb. Kew are on Thistle and exceptionally large flowered. It is said that the fresh flowers have a strong smell like heliotrope. This Dodder was first noticed in Europe about a century ago, having been introduced from Chili. A fascinating account of its subsequent spread through France, Corsica, Italy, Switzerland, Germany, Austria, and Hungary will be found in Hegi, *Mittel-Eur. Fl.*, *3*, 2106-8." —J. E. Lousley.

Solanum Dulcamara L., var. *villosissimum* Desv. Cliffs, near Barry, Glamorgan, v.-c. 41, June 17th, 1936.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales.

Veronica Anagallis × *aquatica* (growing with the putative parents). Port Meadow, Oxford, v.-c. 23, July 30th, 1936. For an account of this hybrid by I. A. Williams, see *Journ Bot.*, 23, 1929. It might be added to the description there given that the bracts, on the whole, are intermediate in length between those of the parents—at least in the Port Meadow plants—but are very variable, some being only half as long as, others equalling the pedicels. The sepals are also intermediate—broader than in *Anagallis* and narrower than in *aquatica*. Racemes very floriferous. Growing in great masses and as abundant as the parent species, but on no plant could I find a fertile capsule—all being completely barren as in the specimens distributed, and a few galled —whereas in the case of *Anagallis* and *aquatica* all appeared to be fertile. The colour of the flowers in these specimens was blue; exactly similar to those of *Anagallis*.—J. Chapple. "Not a hybrid in my opinion, but a sterile condition of *V. Anagallis* L., whose barrenness probably results from animal parasitism. On some racemes may be seen one or several apparent capsules, but examination will show that these are abnormal in size and shape and are devoid of seed. They appear to be of the nature of galls."—C. E. Britton. Mr Chapple took me to the locality, and I agree with his determination.—A. J. Wilmott.

Veronica aquatica Bernh. Port Meadow, Oxford, v.-c. 23, July 30th, 1936. Flowers pink. One or two specimens are eglandular, but most bear varying quantities of glandular hairs.—J. Chapple. "Yes. Var. *latiearpa* E. Krösche."—C. E. Britton.

Veronica arvensis L. Field border, Lambourne Hill, Perranzabuloe, W. Cornwall, v.-c. 1, June 11th, 1936. This plant is described as being usually bifariously pubescent like *V. Chamaedrys*, but the arrangement in the two plants is very different. In *V. Chamaedrys* the long, pointed, glandless hairs, exceeding in length the stem diameter, are

mainly disposed in two narrow strips on either side of the stem. In *V. arvensis* there are oftenest two broad bands of pubescence (crowded, short, incurved hairs) with a sprinkling of straight glandular hairs rather less in length than the stem diameter and between the bands are narrow glabrous strips. But the pubescence may be in three or four strips instead of two.—F. Rilstone. "Apart from the characters of the indumentum described by Mr Rilstone, the plants distributed appear to belong to the var. *polyantha* Math. by reason of the widely-spreading stems and branches, the roundish coarsely-toothed lower leaves and the elongated racemes."—C. E. Britton.

Melampyrum pratense L., var. *ovatum* Spenn. [Ref. No. 4224.] Ranmore, Surrey, v.-c. 17, June 11th, 1936.—C. E. Britton.

Verbena officinalis L. Waste ground, Cardiff, Glamorgan, v.-c. 41, July 1935.—Coll. A. E. Wade, comm. Department of Botany, National Museum of Wales.

Mentha rotundifolia (L.) Huds. Near Start Point, S. Devon, v.-c. 3, August 12th, 1936.—J. Chapple. "Correctly named; one of the more slender forms."—R. Knowling.

Mentha piperita L. *M. piperita sylvestris* Sole = *M. hircina* (Hull). See *Journ. Bot.*, 102, 1936. Lane near Danehill, E. Sussex, v.-c. 14, September 1936.—Coll. A. L. Still, comm. E. C. Wallace. "I believe this to be a hairy sport of × *Mentha piperita*, which is, I think, in agreement with Mr Still's opinion. Some of the specimens show a marked resemblance to *Mentha aquatica* in the shape of the inflorescence, but if *piperita* is a hybrid of *aquatica* and *spicata* it would not be unreasonable for a sport to show sometimes a reversion to one or other of the parents. It would not be satisfactory to name the plant as simply a hairy form, because that would not account for the unusual inflorescence."—R. Knowling.

Mentha aquatica L. × *spicata* L. Cultivated at Wallington, Surrey. Origin, Roydon, Herts, v.-c. 20, 1935.—Coll. A. L. Still, September 1936, comm. E. C. Wallace. Cf. *B.E.C. 1922 Rep.*, 618 (1923), Plant Notes and 1935 Plant Notes for remarks on this plant. "The scent of this plant is very characteristic of *M. aquatica*. The moniliform inflorescence of *M. rubra* does not appear in it, and there is no terminal tuft of leaves, as is almost always the case in *M. rubra*."—A. L. Still. "This is an extremely puzzling mint which for a long time I considered to be *aquatica* × *piperita*—despite the fact that such a cross is rather an unlikely one. I could also detect in it resemblances to *citrata*. However, I have seen lately several more of the specimens distributed, and I believe now that the plant is an extreme form of × *Mentha rubra* Sm. It will be noticed that some of the bracts are shaped exactly like those of *rubra laevigata*, while the lower leaves really only differ from

rubra in their large size. The calyx is perhaps a trifle short, however, and the stamens appear to be inserted. *M. aquatica* × *spicata* is usually taken to be *Mentha piperita*, and as this is certainly no ordinary Peppermint I think the name is rather an unsatisfactory one. I should like to have seen this plant when it was fresh, because the smell would be an important character in naming it."—R. KNOWLING.

×*Mentha verticillata* L., f. *calva* Still. Stanmore Common, Middlesex, v.-c. 21, August 1936.—Coll. A. L. STILL, comm. E. C. WALLACE. " I do not know f. *calva*, but the plant distributed seems to be a slender form of *verticillata* that only just escapes being an *arvensis*. According to the shape of the leaves the plant comes under the *verticillata* of Hudson and not the *verticillata* of Linnaeus."—R. KNOWLING.

×*Mentha gentilis* L. River Wye near Symonds Yat, West Gloucester, v.-c. 34, August 1936.—Coll. A. L. STILL, comm. E. C. WALLACE.

×*Mentha cardiaca* Baker. Cultivated in garden at Wallington, Surrey, by A. L. STILL, August 1936. Root of nursery origin. Comm. E. C. WALLACE. " Yes, I think this will have to be called *cardiaca* but the bracts are abnormally broad and far more like those of ×*Mentha gentilis*. However, the all-important lower leaves are undoubtedly those of a *cardiaca*. The plant seems to be intermediate between the two."—R. KNOWLING.

Mentha arvensis L. Cultivated fields, St Cyrus, Kincardine, v.-c. 91, August 26th, 1936. This is a particularly striking and beautiful cornmint, the most noticeable feature being the rather narrow leaves with their numerous, jagged serratures. In some of the material the leaves were narrow enough for it to be called var. *austriaca* Briquet or forma *angustifolia* Fraser, but in many plants the leaves were too short and round for the above variety. I have not distributed specimens to represent the two extremes because I am confident that all the plants I saw were just different editions of the same thing, the width of the leaves being entirely a matter of form and therefore it is rather unnecessary to name individual plants as different from the others simply because their leaves are slightly narrower than the bulk of the material. If some of these plants were really var. *austriaca* Briquet the variety cannot stand for much. I have never seen any other cornmints that are so striking as this one, and I think they are worth good varietal rank (though not var. *austriaca*). It is noticeable that this particular mint is only common on the coast, and becomes replaced by more normal cornmints as the distance from the sea becomes greater.—R. KNOWLING. " One of the difficult forms. The habit is that of *arvensis*. The calyces are short, and the teeth, though long, are truly triangular; the whorls are compact. I think it must be called *M. arvensis*."—A. L. STILL.

Mentha pulegium L. Start Point, S. Devon, v.-c. 3, August 12th, 1936.—J. CHAPPLE. "My specimens appear to be the erect form."—R. KNOWLING.

Calamintha —— ? Garden, Newport, Isle of Wight, v.-c. 10, August 1936.—J. W. LONG. "This is 562/3 of the *Br. Pl. List*, ed. ii. *Satureia grandiflora* Scheele, *Calamintha grandiflora* Moench, *Melissa grandiflora* L., a native of S. Europe."—J. CHAPPLE. "This is *Calamintha grandiflora* (L.) Moench = *Saturcia grandiflora* (L.) Scheele."—A. E. WADE. "*C. grandiflora* (L.) Mch., the species with which the Isle of Wight *C. sylvatica* Bromf. was once mis-identified."—A. J. WILMOTT.

Galeopsis speciosa Mill. Allotment weed, Llandaff, Glamorgan, v.-c. 41, August 1936.—Coll. R. L. SMITH, comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Chenopodium urbicum L. Cultivated garden, Newport, Isle of Wight, v.-c. 10, October 1936. This was grown from Dorset seed, but no plant raised by me had leaves quite as "toothless" as a plant taken from the same spot many years ago. They all differ, however, from the Island plants, which are unmistakably *intermedium*.—J. W. LONG.

Polygonum lapathifolium L., var. In potato ground, Callestick, Perranzabuloe, W. Cornwall, v.-c. 1, August 28th, 1936. A robust, erect, highly glandular, purplish plant found growing with potatoes, turnips, mangolds, or cabbages, or occasionally on waste ground. It always looks very distinct from the usual pale-flowered *lapathifolium* which accompanies it. Fruits bi-concave. The perianth covers the fruit but the usually erect habit seems to exclude var. *ruderale* Schuster. —F. RILSTONE.

Rumex Acetosa L., var. *rubida* Danser, and var. *alba* Danser. Growing intermixed in open sunny pasture, Lambourne Hill, Perranzabuloe, W. Cornwall, v.-c. 1, June 22nd, 1936. The variation in colour of these two gatherings is not due to varying amounts of sun, nor can one think it due to soil differences for they grew closely mixed in open pasture in full sun. There were intermediates but even so the impression upon the eye was of two fairly clear-cut colour forms. The *B.E.C. 1923 Rep.*, 57, summarises a paper by Herr Danser in *Nederl. Kruidk. Archief*, where names are given to three colour-forms of *R. Acetosa*, viz.:—Var. *rubida*, with panicle deep red and the outer sepals entirely red or with only a small green centre; var. *rubra*, with red-margined outer sepals; and var. *alba*, with little or no red coloration.—F. RILSTONE. "In his original paper in *Nederl. Kruid. Archief*, 1920, 233, B. H. Danser states that his object in giving varietal names to these colour forms of *R. Acetosa* was to draw attention to them. Most botanists in this country would not consider that the single character of the distribution of red pigmentation justified the creation of three new varieties, but would rather regard it as a fit subject for genetical research. Mr Ril-

stone's useful note included with the specimens agrees very closely with Herr Danser's experience of the forms in Holland, but the red specimens received by me agree better with the description of *rubra* than with that of *rubida*."—J. E. Lousley.

Rumex dentatus L. Waste land, Newport, Isle of Wight, v.-c. 10, June and July 1936. This *Rumex* was abundant some years ago on a gravelly waste near Newport, but it died out completely for a time, together with *R. salicifolius* Weinm. and *R. bucephalophorus* L.—J. W. Long. "Correct."—A. E. Wade. "Yes, *R. dentatus* (L.) Campd.—the reason for this citation is given in *B.E.C. 1892 Rep.*, 384. This dock allied to *R. pulcher* is a native of N. Africa and W. Asia and illustrated by Danser in *Nederl. Kruid. Archief*, 1921, 222-4, t. ii, and by Beck in Reichenbach, *Icones, 24*, t. 183, fig. 7, 1909. In Britain it is a rare alien."—J. E. Lousley.

Euphorbia virgata W. & K., var. *esulifolia* Thell. Eastbourne Golf Course, E. Sussex, v.-c. 14, June 22nd, 1936. Growing in quantity at the edge of the Golf Links near the Market Gardens. I assumed it to be *E. esula* L. and to be an escape from the Gardens. The botanist, Mr T. J. Richards, at the Municipal Museum, informs me that it appeared when the military had left the Links after the war and was thought to be *E. esula* L., but it was submitted to expert examination and named as above.—H. Foster. "Yes—the f. *esulifolia* Thell."—A. J. Wilmott.

Quercus sessiliflora Salisb. Young shoots, hedge bank, Flatford, East Bergholt, E. Suffolk, v.-c. 25, May 7th, 1936. This unusual incise-lobate form of leaf not previously noticed was found at the roots of only one stump.—G. C. Brown. "This is Turkey Oak (*Quercus Cerris* L.) as shown by the persistent stipular bud-scales, hairy branchlets, and acutely lobed leaves."—H. A. Hyde. "This is the cut-leaved variety, *Q. Cerris*, known as var. *asplenifolia*."—A. B. Jackson.

Salix triandra L., var. Cinderhill, Nottingham, v.-c. 56, June 2nd, 1934.—Coll. R. Bulley, comm. Nottingham Natural History Museum.

Salix atrocinerea L., var. *aquatica* (Sm.). [Ref. No. 1477] ♂ and [Ref. No. 1476] ♀. Hodson, N. Wilts, v.-c. 7, April 25th, 1936, and August 23rd, 1936.—J. D. Grose. "Good specimens of both male and female plant."—E. C. Wallace. "Certainly *S. atrocinerea* Brot., but not the variety named."—A. J. Wilmott.

Populus nigra L. [Ref. No. 1475.] Old Swindon, N. Wilts, v.-c. 7, April 1936. [Ref. No. 1475a.] May 1936. I was unable to obtain mature leaves as the tree was felled shortly after the April gathering was made. The older leaves sent were collected from the fallen tree, and brought forward in water.—J. D. Grose. "Both are *P. candicans* Aiton. (Ontario Poplar, Balm of Gilead.) Rehder, *Manual*, p. 89, 1927. Henry, *T.G.B.I.*, 7, p. 1834, 1913. (*P. tacamahacca* Mill. sec. Moss.

Camb. Brit. Fl., Vol. ii, 1913; nec Rehder, *l.c.*, non Sargent, *Trees N. Amer.*, ed. 2, 125, 1921)."—H. A. HYDE. "The *Populus* sent is undoubtedly *P. candicans* Aiton which is commonly planted in this country and occasionally found in a semi-wild condition. It is only known as a female tree and these long catkins are very characteristic. The specimen is, however, incomplete without mature leaves. This tree has been confused with *P. tacamahacca*, a N. American species."—A. B. JACKSON.

Allium oleraceum L. Near Bulwell Hall Park, Nottingham, v.-c. 56, August 25th, 1936.—Coll. R. BULLEY, comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Juncus Gerardi Lois. Hornsea, S.E. Yorks, v.-c. 61, July 17th, 1936. —Coll. R. BULLEY, comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Luzula arcuata Wahl. Wet grassy ground high on Aonach Beag, Westerness, v.-c. 97, July 15th, 1936. These plants were abundant in grass and moss on damp ground and by a rill, a habitat quite unlike the haunts of this plant on the dry stony summits of the Cairngorms. —R. MACKECHNIE and E. C. WALLACE.

Sparganium simplex Huds. Canal, Bridgford, Nottingham, v.-c. 56, July 1934.—Coll. R. BULLEY, comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Potamogeton Drucei Fryer. [Ref. No. 1909.] River Stour, near Child Okeford, Dorset, v.-c. 9, August 3rd, 1936.—P. M. HALL and E. C. WALLACE.

Potamogeton Drucei Fryer. River Loddon near Whistley Mill, Berkshire, v.-c. 22, August 18th, 1936.—E. C. WALLACE.

Potamogeton gramineus L., ? f. *stagnalis* Fries. Abundant in Cropstone reservoir, Leicester, v.-c. 55, August 29th, 1936. These specimens, according to Hagstrom, *Crit. Res.*, 206, 1916, appear to be the forma *stagnalis* Fries, *Novit. Fl. Suec.*, 37, 1828—"foliis natantibus basi ovatis, caule longo ramoso," which is said to be a form of Central and Southern Swedish lakes, as distinct from the forma *lacustris* Fries, a plant of deep water with short submerged leaves and no floating leaves. This is not made clear by Pearsall in *B.E.C. 1930 Rep.*, 393 (1931). Hagstrom has named specimens of f. *lacustris* Fries from Tingwall, Shetland, and from Black Bush Drain, Hunts.—J. CHAPPLE. "I should name these rather *P. gramineus* L., *var. lacustris* Fries, in accordance with Pearsall's grouping of the forms of this variable species in *B.E.C. 1930 Rep.*, 393. On the same day I gathered plants from this locality with well-developed floating leaves, but Mr Chapple's specimens do not show these, and the dense vegetative growth usual in the lower parts is not represented. As Cropstone Reservoir has been intensively worked botanically over a long period without previous record of *gramineus* it

is probable that this plant is a recent introduction. Since the town of Leicester ran desperately short of water during a drought a few years back the water in the reservoir has been maintained at a much higher level, and this may have encouraged the rapid increase of this plant, which now occurs in considerable quantity."—J. E. Lousley. "I have another gathering made by Mr Lousley in the same locality, and on the same date, which shows more of the familiar branched and bushy habit of this species. According to Pearsall, *B.E.C. 1930 Rep.*, 393 (1931), this would appear to be one of the forms under var. *lacustris* Fries."—P. M. Hall.

Potamogeton obtusifolius M. & K. Brick pond, Busby Stoop, near Thirsk, N.E. Yorks, v.-c. 62, August 26th, 1935.—C. M. Rob.

Potamogeton filiformis Pers. [Ref. No. 1783.] In the stream running out of Lough Keel, Achill Island, West Mayo, v.-c. H.27, May 26th, 1936.—P. M. Hall.

Rynchospora fusca Ait. Moorland between Loch Shiel and Loch Eil and by Loch Dubh Torr an Tairbeirt, Westerness, v.-c. 97, July 9th, 1936.—R. Mackechnie and E. C. Wallace.

Carex sylvatica Huds. Portland Park, Kirkby, Nottingham, v.-c. 56, June 23rd, 1932.—Coll. R. Bulley, comm. Nottingham Natural History Museum.

Carex strigosa Huds. [Ref. No. 24.] Forge Valley, N.E. Yorks, v.-c. 62, July 11th, 1936.—W. A. Sledge.

Carex fulva Host. Ventongimps Moor, Perranzabuloe, W. Cornwall, v.-c. 1, June 15th, 1936.—F. Rilstone.

Carex elongata L. [Ref. No. 20.] Askham Bog, Mid-West Yorks, v.-c. 64, June 21st, 1936.—W. A. Sledge. "Excellent specimens, and my sheet shows well the contrast between the mature and immature spikes. This species was first recorded from Britain from Aldwarke below Sheffield by Jonathan Salt about 1807, and as it has long disappeared from this station it is pleasing to have recent specimens from the same county. Askham Bog is not given as a locality in Lees' *Fl. W. Yorks.* (1888)."—J. E. Lousley. "See Plant Records, p. 286, of this Report, for a full account of the Yorkshire records of this species."—P. M. Hall.

Alopecurus myosuroides Huds. Apparently quite awnless. Riverside, Newport, Isle of Wight, v.-c. 10, May 1936.—J. W. Long. "Correct; but usually written *A. agrestis* L., though both names were published independently in 1762."—W. O. Howarth. "This is a form of *Alopecurus myosuroides* Huds. in which the awn is much reduced in length and enclosed in the glumes. It occurs in Cyprus, Anatolia, Syria,

Persia and Iraq; and was described by Boissier (*Fl. Orient.*, v, 485, 1884) as *Alopecurus agrestis* L., var. *tonsus* Blanche."—C. E. HUBBARD.

Alopecurus bulbosus Gouan. [Ref. No. 862.] South Ferriby, North Lincs, v.-c. 54, August 10th, 1936.—E. S. EDEES. "Correct."—C. E. HUBBARD.

Agrostis verticillata Vill. A garden weed, Newport, Isle of Wight, v.-c. 10, July 1936.—J. W. LONG. "Correct."—W. O. HOWARTH. "This interesting grass was first recorded for Britain by G. C. Druce from Alderney and Guernsey in *Journ. Bot.*, 1906, 320, a brief description with additional notes appearing in *Journ. Bot.*, 1907, 450, and *B.E.C. 1906 Rep.*, 199, and a fuller account in *Proc. Linn. Soc.*, 76-7, March 7, 1907. From these and a further note in *B.E.C. 1912 Rep.*, 295, it appears that Druce was quite prepared to regard it as native in the Channel Isles. Specimens were gathered by Jas. Fraser at Leith Docks, Edinburgh, v.-c. 83, in September 1909 (Herb. Sth. Ldn. Bot. Inst.). Davey next found it at Falmouth Docks, v.-c. 1, an avowed adventive but covering a fair area of ground (*Journ. Bot.*, 1910, 80, and *Rep. Watson B.E.C.*, 1910-11, 319), while a further note on Guernsey plants will be found in *Rep. Watson B.E.C.*, 1912-13, 415, and a putative hybrid with *A. palustris* is mentioned in *B.E.C. 1924 Rep.*, 457 and 744. In *B.E.C. 1924 Rep.*, 602, *A. verticillata* was recorded from 'Frinton and Walton on the Naze, Essex' and 'Cardiff and Colchester.' Thus to the distribution given in *Comital Flora*, v.-cc. 1, 19, and 83 should certainly be added. It has also been found near Uxbridge, L. B. Hall and W. R. Sherrin, September 1919 (Herb. Sth. Ldn. Bot. Inst.)—presumably in Middlesex, v.-c. 21. In Europe the plant occurs as a native in damp ground in the Mediterranean area, and although widely naturalised and easily overlooked, its distribution is against its acceptance as a native of this country."—J. E. LOUSLEY. "The correct name for this species is *Agrostis semiverticillata* (Forsk.) C. Christ. (*Phalaris semiverticillata* Forsk.)."—C. E. HUBBARD.

Gastridium ventricosum (Gouan) S. & T. [Ref. No. 1852.] Garden ground in Manor Lane, South Hayling, S. Hants, v.-c. 11, July 25th, 1936.—P. M. HALL. "*Gastridium ventricosum* (Gouan) S. & T. is correctly identified, but should be written *G. lendigerum* (L.) Gaud. Linné's is the oldest epithet (*Milium lendigerum*, *Sp. Pl.*, ii, 91, 1763) and should be retained, even though transferred to another genus."—W. O. HOWARTH. "Correct."—C. E. HUBBARD.

Gaudinia fragilis (L.) Beauv. Meadow, near Ryde, Isle of Wight, v.-c. 10, July 1917. I am sorry the *Gaudinia* specimens are so incomplete. I gathered the spikes when they were abundant and I had no thought of the Exchange Club. I did not search for the plant again until 1931, when the late Dr Drabble accompanied me. We found that the meadow had been seized upon by the builder, but the plant continued to exist in the part of the original hedgerow that still remained.

I am convinced that it must have been an Island plant for many years. Early this year, in a remote corner at the opposite end of the Island, I found a grass in an immature condition which I could not at the time identify. On planting it in my garden it lived and proved to be *Gaudinia*, and it is very unlikely that I brought away the only plant.—J. W. Long. "*Gaudinia fragilis* (L.) P.B. is an alien, introduced no doubt along with the seeds of forage plants from S. Europe."—W. O. Howarth. "Correct."—C. E. Hubbard.

Sesleria coerulea Ard. Gordale, Mid-West Yorks, v.-c. 64, June 2nd, 1936.—H. Foster. "Correct."—W. O. Howarth and C. E. Hubbard.

Puccinellia distans (L.) Parl. [Ref. No. 1873.] Adventive on manure heap, Laffan's Plain, near Fleet, N. Hants, v.-c. 12, July 26th, 1936.—P. M. Hall. "Correct."—W. O. Howarth and C. E. Hubbard. "Yes, specimens gathered at the same time were named *Puccinellia distans* Parl. by Jansen. The occurrence of this species inland as an alien is more frequent than is generally recognised."—J. E. Lousley.

Festuca elatior L. [Ref. No. 867.] Canal side, Milton, near Burslem, Staffordshire, v.-c. 39, July 11th, 1936.—E. S. Edees. "Correct." —C. E. Hubbard. "*F. elatior* L., subsp. *arundinacea*, var. *genuina*, subvar. *vulgaris* Hack."—W. O. Howarth.

Festuca pratensis Huds. × *Lolium perenne* L. [Ref. No. 868.] Whitfield, near Burslem, Staffordshire, v.-c. 39, July 13th, 1936.—E. S. Edees. "Quite a good example of this hybrid."—W. O. Howarth. "Correct."—C. E. Hubbard.

Festuca heterophylla Lam. Near Bradfield, Berks, v.-c. 22, June 25th, 1936. First discovered here by Druce and Riddelsdell in 1907 (see *B.E.C. 1907 Rep.*, 322 (1908)) and thought to be native. It is hard to explain how, if it is a denizen, this species became established in so remote a situation unless it was introduced with pheasant food.—J. Chapple. "Correct."—W. O. Howarth and C. E. Hubbard.

Nardurus maritimus (L.) Janchen. Torbryan, near Totnes, S. Devon, v.-c. 3, May 1936.—Coll. T. Stephenson, comm. J. Chapple. (See *Proc. Linn. Soc.*, March 1936, p. 109). "An interesting find. It occurs here and there in France, and is very rare in Belgium. Linnaeus named it *Festuca maritima*, and it is a matter of opinion whether it should be retained as such or named as above."—W. O. Howarth. "Correct."— C. E. Hubbard.

Bromus lepidus Holmb. [Ref. No. 21.] Sandy field near Topcliffe Station, N.E. Yorks, v.-c. 62, June 25th, 1936.—W. A. Sledge. "Correct."—W. O. Howarth and C. E. Hubbard.

Equisetum sylvaticum L., var. *capillare* Hoffm. Near Minstead, S. Hants, v.-c. 11, August 6th, 1936.—Coll. Lady Davy, comm. J. Chapple. "This variety appears not to have been recorded before for Hants."—J. Chapple.

Equisetum pratense Ehrh. Colin Glen, near Belfast, Co. Antrim, v.-c. H.39, 1858.—Coll. T. G. Rylands, comm. Department of Botany, National Museum of Wales.

Polystichum aculeatum Roth. [Ref. No. 1446.] Membury, N. Wilts, v.-c. 7, November 24th, 1935.—J. D. Grose.

OCT 1937

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1937

WITH BALANCE SHEET AT 31st DECEMBER 1937.

BY THE

HONORARY EDITOR,

PATRICK M. HALL,

12 HIGH STREET, FAREHAM, HANTS.

VOL. XI. PART V.

PRICE 10s.

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September 1938.

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. XI. PART V).

Victoria Regina.

Floreat flora.

REPORT FOR 1937

BY THE

HONORARY EDITOR,

PATRICK M. HALL,

12 HIGH STREET, FAREHAM, HANTS.

The Ordinary Member's Subscription of 10/- per annum (or Exchange Member's 20/-) became due on 1st January 1938, and should be paid to the Honorary Secretary, JOHN F. G. CHAPPLE, Yardley Lodge, Crick Road, Oxford.

Exchange Club Parcels for 1938 should be sent, post paid, on or before 1st December 1938, to the HONORARY SECRETARY, who will act as Distributor and Editor of the Distributor's Report (Vol. XII. Part 11).

PRICE 10s.

(The Editor does not hold himself responsible for Statements in Signed Contributions).

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SEPTEMBER 1938.

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THE BOTANICAL SOCIETY & EXCHANGE CLUB OF THE BRITISH ISLES.

OFFICERS FOR 1938-39.

ELECTED AT THE ANNUAL GENERAL MEETING, MARCH 16TH, 1938.

Chairman—The Rt. Hon. H. T. Baker, P.C.
Vice-Chairman—Mr J. Ramsbottom, O.B.E., M.A., F.L.S.
Hon. Secretary—Mr John F. G. Chapple.
Hon. Treasurer—Mr Francis Druce, M.A., F.L.S.
Hon. Editor—Mr Patrick M. Hall, M.C., F.L.S.

COMMITTEE.

To retire March, 1939.

Dr R. W. Butcher, B.Sc., Ph.D., F.L.S.
Mr J. S. L. Gilmour, M.A., F.L.S.
Mr E. Milne-Redhead, B.A.
Miss E. Vachell, F.L.S.

To retire March, 1940.

Mr J. E. Lousley.
Mr N. Y. Sandwith, M.A., F.L.S.
Mr N. D. Simpson, M.A., F.L.S.
Mr A. L. Still, B.A.

To retire March, 1941.

Mr A. H. G. Alston, M.A., F.L.S.
Mr C. E. Britton, A.L.S.
Mr H. W. Pugsley, B.A., F.L.S.
Lt.-Col. A. H. Wolley-Dod.

To retire March, 1942.

Mr R. H. Corstorphine, B.Sc., F.L.S.
Lady Davy.
Mrs Foggitt.
Dr W. A. Sledge, Ph.D.

Co-opted Member—Mr A. J. Wilmott, M.A., F.L.S.

SUB-COMMITTEES.

Editorial Sub-Committee.

Mr R. H. Corstorphine.
Mr N. Y. Sandwith.
Mr A. J. Wilmott.
The Hon. Editor.

Excursions and Field-work Sub-Committee.

Dr R. W. Butcher.
Miss E. Vachell.
The Hon. Secretary.

Rules Sub-Committee.

The Editorial Sub-Committee with the addition of Mr Francis Druce.

Delegate to British Association—Dr W. B. Turrill, D.Sc., F.L.S.

NEW MEMBERS

(UP TO MAY 1, 1938).

Clark, Dr W. A., Dept. of Botany, King's College, Newcastle-upon-Tyne.
Daly, Mrs Bowes, Dunsandle, Athenry, Co. Galway. (1938.)
Gough, Mrs H., Raford, Athenry, Co. Galway. (1938.)
Gough, J. W., M.A., 10 Staverton Road, Oxford. (1938.)
Leadbitter, E. C. E., C.V.O., 160 Addiscombe Road, Croydon, Surrey.
Leather, Miss V. M., Wyards, Studland, Dorset. (1938.)
Maekechnie, R., B.Sc., 9 Skirving Street, Shawlands, Glasgow, S.1.
*Nelson, G. A., Ph.C., F.L.S., 37 The Crescent, Adel, Leeds, 6. (1938.)
Pinkett, Miss Mary M., " Sunnymead," Braunton, N. Devon.
*Rose, Mrs Eric, Lewcston Manor, Sherborne, Dorset.
†Stephenson, Rev. T., D.D., 15 Priory Avenue, Kingskerswell, Devon.
Taylor, S. A., 34 Nelson Street, Leicester. (1938.)
Turnbull, Miss Evelyn, The Mill House, Hildenborough, Kent.
Valentine, D. H., M.A., Ph.D., Botany School, Cambridge.
Wells, Mrs E. M., 91 Colum Road, Cardiff.
Wilde, Mrs C. L., Lindfield, Marshall Road, Godalming, Surrey. (1938.)
Wilkinson, J. S., 26 Golders Rise, Hendon, London, N.W.4. (1938.)
Wilkinson, John, B.Sc., c/o Hartley Botanical Laboratories, The University, Liverpool, 3. (1938.)
Wilkinson, Miss W., Hewell Grange, Redditch, Worcs.
Williams, M. L., The Elms Cottage, Colwall, Malvern. (1938.)
Woodhead, J. E., B.Sc., F.I.C., Ph.C., 3/22 Kensington Palace Court, Sancroft Road, London, S.E.11. (1938.)

CORRECTIONS IN THE LIST OF MEMBERS AND CHANGES OF ADRRESS AND TITLE.

Baring, Hon. Mrs G., Empshott Grange, Liss, Hants.
Butcher, R. W., B.Sc., Ph.D., F.L.S., Culford House, Ewe Lamb Lane, Brameote, Notts.
Creed, Dr R. S., New College, Oxford.
Curtis, Sir Roger, Bart., The Midland Hotel, Derby.
Dony, J. G., B.Sc., 41 Somerset Avenue, Luton, Beds.
Godalming Natural History, etc., Society. Delete *.
Johnston, Colonel H. H., C.B., C.B.E., D.Sc., etc., c/o Messrs Glyn, Mills & Co., Holt's Branch, Kirkland House, Whitehall, S.W.1.
Lawn, J. G., C.B.E., Hon. D.Sc., Long Acre, Shamley Green, Guildford.
Marks, C. E., Islington Cemetery, East Finchley, London, N.12.
Norton, F., " Westward Ho," 3 Pencisely Rise, Cardiff.
Phillips, Hugh, 803 Raleigh House, Dolphin Square, Grosvenor Road, S.W.1.
Sprott, W. A. P., The Friary, Appleby, Westmorland.
Willan, Mrs Hugh, Underhill House, Shorncliffe, Kent.

ACCOUNTS FOR THE YEAR 1937.

GENERAL FUND.

To Balance from 1936,	£149	7	0	By Insurance,	£0	6	0
,, Subscriptions for 1937 (£181 16s 3d); paid in advance (£30),	211	16	3	,, Advertisement,	1	0	0
,, Excursion Fees,	1	2	6	,, Cheque Book,	0	4	2
,, Donations — Miss D. Cadbury (£18); Miss M. Campbell (19s 6d)	18	19	6	,, Printing (other than Reports), Stationery, & Binding,	15	18	6
,, Sales of Reports and Reprints,	5	19	11	,, Printing Report,	148	6	6
				,, Expenses of Distributor,	1	0	0
				,, Honorarium to Secretary,	25	0	0
				,, Postage & Petty Expenses — Secy. (£11 2s 6d), Editor (£3 15s 6d),	14	18	0
				,, Balance,	180	12	0
	£387	5	2		£387	5	2

PUBLICATIONS FUND.

To Balance from 1936,	£121	0	4	By Balance,	£126	3	10
,, Sales of Comital Flora and Plant List,	5	3	6				
	£126	3	10		£126	3	10

LIFE MEMBERS' FUND.

To Balance from 1936,	£123	8	0	By Balance,	£144	8	0
,, 3 Life Compositions at £7,	21	0	0				
	£144	8	0		£144	8	0

Miss TROWER'S FUND.

To Balance from 1936,	£16	7	11	By Balance,	£16	7	11

BENEVOLENT FUND.

To Balance from 1936,	£41	3	6	By Balance,	£41	3	6

BALANCE-SHEET AT 31st DECEMBER 1937.

General Fund,	£180	12	0	500 National Savings Certificates, at cost,	£400	0	0
Publications Fund,	126	3	10	Cash at Bank,	108	15	3
Life Members' Fund,	144	8	0				
Miss Trower's Fund,	16	7	11				
Benevolent Fund,	41	3	6				
	£508	15	3		£508	15	3

(Signed) FRANCIS DRUCE, Hon. Treasurer.

8th February 1938.—Examined and found correct.

(Signed) H. W. PUGSLEY, Auditor.

SUMMARY OF PROCEEDINGS OF MEETINGS.

A meeting of the Committee was held on November 17th, 1937, at which the report of the Excursions Sub-Committee on the Excursions for 1937 was adopted. (A fuller account of the excursions appears on pp. 428-435 of this Report.) The terms of reference of the Exeursions and Editorial Sub-Committees had not been exactly defined, and the following were agreed upon:—

Excursions Sub-Committee—To organise excursions in accordanee with the recommendations set forth in the appendix, p. 390 of the 1936 Report.

Editorial Sub-Committee—(i) To select articles on botanical subjects for the Annual Report. (ii) To decide the admissibility of Plant Records. (iii) To keep up to date and to revise the *British Plant List* and the *Comital Flora*. (iv) To act as advisers to the Hon. Editor on all matters connected with the Society's publications.

The Rules Sub-Committee was re-elected, and it was decided that a separate notice of the date of the Conversazione should be circulated to members about two months beforehand.

At the meeting of the Committee on Mareh 16th, 1938, the Hon. Secretary stated that the Society had been admitted an affiliated corresponding Society of the British Association and Dr Turrill was appointed to be the Society's Delegate to the British Association. The Hon. Secretary also stated that the Linnean Society, in response to the Committee's request, had arranged for a paper of interest to British taxonomic botanists to be read at their meeting the next day, for the benefit of members of the B.E.C. who had come to attend the Annual General Meeting. The recommendation of the Rules Sub-Committee, that it is at present unnecessary to alter the existing Rules, was adopted. The Committee decided there should be no " speeches " at the Conversazione but that a paper of botanical interest should be read after the Annual General Meeting. Mr Pugsley was re-appointed Hon. Auditor and the Hon. Secretary was re-appointed Distributor of the Exchange Club for 1938. A Sub-Committee, consisting of Mr Sandwith, Mr Wilmott, and the Hon. Secretary, was elected to answer the letter and questionnaire which had been received from the Association for the Study of Systematics in relation to General Biology. Mr Wilmott was co-opted to the Committee, and the Editorial, Excursions and Rules Sub-Committees were re-appointed for the ensuing year.

At the Annual General Meeting, held on the same date, 37 members were present, and the meeting was presided over by the Chairman, the Rt. Hon. H. T. Baker. After the adoption of the Hon. Secretary's and Hon. Treasurer's Reports and the election of Officers of the Society, as enumerated on p. 423, the following five Honorary Members were elected, on the recommendation of the Committee:— Dr P. Aellen, Heer P. Jansen, Dr K. H. Reehinger, Monsieur P. Senay, and Heer P. Vermeulen.

The thanks of the Society are due to the Linnean Society of London, in whose rooms at Burlington House the Society's meetings throughout the year were held.

REPORT OF THE HONORARY SECRETARY FOR 1937.

The membership of the Society continues steadily to increase, and the slight upward trend recorded in 1936 is maintained. I am glad to report that 22 new members were added to our register in 1937, and, after allowing for 11 resignations and seven deaths (including two Corresponding Members, whose number does not enter into these calculations), a total of six is the nett increase. I regret to record the death of the following in 1937 (in addition to those mentioned in the 1936 Report):—Lord Rothschild, Bolton King, and our Corresponding Member, R. F. Towndrow.

There must be many more potential members among individuals, libraries and institutions, and I would ask members to use their efforts in securing more subscribers to the Society.

The number of members active in sending in records and observations forms a small percentage of the total, and is not nearly so great as a Society with our membership should warrant. We have members scattered throughout the British Isles who have unequalled facilities for helping to provide a better geographical knowledge of our flora, and, in conjunction with the Referees, especially of the more critical genera. As was pointed out by the Honorary Editor on page 214 of the last Report, records to be of value need not necessarily be new County records, but any observations which provide some new knowledge will be welcomed. In the case of critical plants, these must be accompanied by voucher specimens, and I shall be pleased to receive from members any such fresh material for pressing, provided it is sent in a *tin*. At least two adequate specimens (several plants in certain cases) should be sent, the sender retaining a duplicate. Referees of critical genera are entitled to retain, should they wish, a specimen of everything they name, and one specimen is needed for the Herbarium of the British Museum, where it is at all times available for inspection. It would be a considerable help, in the case of dried specimens, if parcels reached me not later than October 31st. If members will comply with this request, the Referees, who give up much of their time in the interests of the Society, will be spared much extra trouble.

I should like to take this opportunity of expressing my thanks to Mr P. M. Hall for his valuable co-operation, and to Mr Wilmott and others, too numerous to mention, for their help in many ways.

The Society is deeply indebted to the Linnean Society for being allowed the use of their rooms during the year; to the authorities of the British Museum (Natural History), and of the Royal Botanic Gardens, Kew; and to the numerous Referees for their continued and willing help.

REPORT ON THE EXCURSIONS ARRANGED IN 1937.

May 22. An afternoon on Chalk Downs near Ranmore Common, Surrey. Leader, Lady Davy.

The weather was not fortunate for this the first excursion of the year. The clouds were low and heavy and at intervals during the afternoon it rained heavily. In spite of this, 24 members and friends assembled at Byfleet, whence we set off for Effingham Downs. Here were found a few plants of *Orchis ustulata* and plenty of *Polygala calcarea*. A small pond was covered with the showy flowers of *Ranunculus peltatus*, which had growing with it, in smaller quantity, *R. trichophyllus*. On a chalk slope between Ranmore Common and Gomshall a quantity of *Fragaria chiloensis* was found well naturalized, and a few plants of *Aceras* and *Cerastium pumilum* were found. The expedition concluded with tea at Gomshall, when a vote of thanks was passed to the leader.

June 14-19. Five days in Anglesey.

It is with regret that we have to record that this expedition—which was to have been led by Mr Norman Woodhead—was deprived of his leadership, and had to rely instead mainly on the map and on the help of Miss Armitstead and of other members who had previous knowledge of the island. That Mr Woodhead would be unable to lead was only known literally at the last minute—too late, of course, for provision to be made for a substitute.

Twenty-six members and friends attended, most of whom stayed at the headquarters, the Cliff Hotel, Trearddur, where we were fortunate in having the use of a large room each evening for discussion and the pressing of plants. The weather throughout could not have been better, and the hot and sunny days added considerably to the enjoyment of the expedition. Each morning the party set out at about 9.30 with sandwich lunch from the hotel and did not return until the evening. Excellent teas, with abundant supplies of the local fare, were had each day in villages close to the district being worked. For this service—difficult for a large party in Anglesey—thanks are due to Miss Armitstead, who had made the arrangements in advance.

Among the places visited and explored were Malldraeth Marsh, Cors Bodeilio, Newborough Warren, the N.E. of the island—Penmon, Wern, Red Wharf Bay, Gors Goch, Aberffraw Common, and the Trearddur Bay district. Of the results of the excursion, mention must be made of the finding of several rare Orchid hybrids, of *Juncus capitatus* in a new locality, and of *Rorippa sylvestris* and *Stellaria neglecta*, as well as several varieties hitherto unrecorded for v.-c. 52. A list of the more important and interesting plants found is given below; others have been incorporated in the Society's card-index as have the following:—

Ranunculus Drouetii F. Schultz. Malldraeth Marsh and Newborough Warren.
R. heterophyllus Weber, var. *submersus* Bab. Penmon Priory.
Nymphaea alba L., var. *occidentalis* Ostenf. Gors Goch.
Fumaria Bastardi Bor., var. *hibernica* Pugsl. Newborough Warren.
**Rorippa sylvestris* (L.) Sm. Trearddur Bay.
Viola lutea Huds., f. *Curtisii* (Forst.) Drabble. Newborough Warren.
Polygala oxyptera Reichb., with var. *dunensis* Dum. Newborough Warren.
**Stellaria neglecta* Weihe. Llanddona.
Arenaria serpyllifolia L., var. *macrocarpa* Lloyd. Shore near Penmon.
Sagina maritima Don. Shore near Penmon.
Geranium pusillum L. Newborough Warren.
Erodium Lebelii Jord. Newborough Warren.
Trigonella ornithopodioides DC. Rhosneigr and Newborough Warren.
Vicia Cracca L., var. *incana* Thuill. Roadside near Cors Bodeilio.
Callitriche intermedia G. F. Hoffm., var. *pedunculata* (DC.) Druce. Malldraeth Marsh.
Valerianella olitoria Poll., var. *lasiocarpa* Reichb. Newborough Warren.
Antennaria dioica (L.) Gaertn., var. *pedicellata* F. B. White. Arthur's Table.
Jasione montana L. (? var. *major* M. & K.). Roadside near Rhosneigr.
Digitalis purpurea L., var. *nudicaule* Saunders. Near Wern.
Veronica aquatica Benq. Newborough Warren.
Euphrasia curta Fr. ex Wettst. Newborough Warren.
E. occidentalis Wettst. Newborough Warren: near Holyhead.
Var. *calvescens* Pugsl. (with mauve flowers). Arthur's Table.
Mentha longifolia (L.) Huds. Farm-yard, Cors Bodeilio (Miss Vachell).
Thymus neglectus Ronn. Arthur's Table.
Ceratophyllum demersum L. Llyn Maelog.
Orchis L.: see "Plant Records," pp. 505 and 507.
Ophrys muscifera Huds. A small group of plants in the middle of Cors Bodeilio, a locality mentioned in *Fl. Anglesey* (Hon. W. J. L. Palmer).
Iris Pseudo-acorus L., var. *Bastardi* (Bor.). Malldraeth Marsh.
Juncus capitatus Weig. S.W. side of Newborough Warren.
Alisma ranunculoides L. Malldraeth Marsh.
Zannichellia pedicellata Fries. Penmon Fish-pond.
Heleocharis uniglumis Schultes. Newborough Warren: Red Wharf Bay: Four Mile Bridge.
Carex riparia Curtis. A curious plant was found in Malldraeth Marsh by Col. Watts which is, apparently, a form of this species. The fertile spikes were shorter than normal, the lowest being very distant on a long peduncle 12 cm. long, and the whole plant having a pendulous and very graceful habit.
C. Hostiana DC. × *lepidocarpa* Tausch. Gors Goch.
C. Oederi Retz., var. *oedocarpa* Anderss. Gors Goch.
C. panicea L., f. *lumidula* Laest. Cors Bodeilio: Gors Goch.
C. vulpina L., with an interrupted spike—var. *interrupta* Peterm. Malldraeth Marsh.
Anthoxanthum odoratum L., var. *villosum* Loisel. Red Wharf Bay.
Aira praecox L., var. *prostrata* Druce. Newborough Warren.
Koeleria gracilis Pers., var. *britannica* (Domin) Druce. Arthur's Table: Rhosneigr: Trearddur Bay.
K. albescens DC. Rhosneigr.
Briza media L., var. *albida* Lej. Gors Goch: Llan-fawr Quarry.
Poa pratensis L., var. *subcaerulea* (Sm.). Newborough Warren.
Puccinellia maritima (Huds.) Parl. Newborough Warren: Red Wharf Bay.
Scleropoa rigida Griseb. Gors Goch.
Festuca rubra L., var. *glaucescens* Heg. & Heer. Newborough Warren. Forma, Trearddur Bay: a form with more hairy fertile glumes, and more bloom, near Penmon.
Bromus hordeaceus L. (? var. *macrostachys* (Duval-Jouve) Druce). Newborough Warren.

Equisetum palustre L., var. *nudum* Newman. Newborough Warren.
E. variegatum (Schleich.) Weber, var. *arenarium* Newman. Newborough Warren : Aberffraw Common.

(Charophytes all named by G. O. Allen.)

Tolypella glomerata Leonh. Newborough Warren.
Chara rudis (Br.) Leonh. Gors Goch.
C. hispida L. Newborough Warren.
C. aculeolata Kütz. Newborough Warren : Gors Goch.
C. aspera Willd. Llyn Coron.
C. desmacantha Gr. & B.-W. Gors Goch.
C. delicatula Ag. Cors Bodeilio.

July 9-12. The Dorset Coast, St Alban's Head, westward to Osmington. Leader, Mr N. Douglas Simpson.

Seventeen members, who were about equally divided between the two hotels in Wareham, attended this excursion, and were rewarded by some delightful walks which had been arranged for them by Mr Simpson along this little known but, nevertheless, beautiful part of the Dorset coast. In glorious weather we set out on Saturday for Swyre Head, and, descending to the path along the cliff top, came across good specimens of *Veronica agrestis*. Walking in a north-westerly direction to Kimmeridge Bay the cliff path was fringed with *Carduus pycnocephalus*, var. *tenuiflorus*, for, one might truthfully say, hundreds of yards, and growing with it in lesser quantity was *Silybum Marianum*. Other interesting plants found on these cliffs above the Kimmeridge ledges were *Centaurium pulchellum*, var. *palustre*, *Pholiurus filiformis* and *Lathyrus Nissolia*. Retracing our steps and proceeding to Egmont Point, a few plants of *Ophrys apifera* were seen and *Euphrasia brevipila*, f. *subeglandulosa*, was collected. Walking up through the beautiful Encombe woods, the lakes were explored and two interesting forms of *Ranunculus Baudotii* were collected. Around the farm at Encombe were seen a number of fine trees of the Cornish Elm (*U. stricta* Lindley) which had, no doubt, been planted. Rejoining the cars at Swyre Head, we then visited Chapman's Pool—a small cleft in the cliffs having a small bog and a stream—where such plants as *Orchis praetermissa* and *Juncus obtusiflorus* were found. On the cliff side a few plants of *Pholiurus incurvus* were seen and fine specimens of *Euphrasia occidentalis*, var. *calvescens*, were gathered.

On Sunday we were not so fortunate with the weather, for we had only gone a short distance from Arish Mell on a walk to Mupe Rocks when heavy rain began to fall, accompanied by a thick sea mist. However, a few managed to get to Mupe Bay, and there found *Papaver somniferum*, var. *setigerum*, in fair quantity, *Gentiana Amarella* and a few plants of *G. anglica* in fruit. Returning to Arish Mell we took the cars to Tyneham, where, along the track leading to Worbarrow Bay, is a long line of the Dutch Elm (*U. major* Sm.). At Worbarrow Bay such plants as *Spergularia marginata*, var. *glandulosa*, *Erodium maritimum*, and *Carex hirta*, var. *subhirtaeformis*, were found, but on account of the drenching rain a longer search of this interesting bay and its cliffs had to be abandoned, and a very bedraggled party—for

the most part soaked to the skin—made for a very welcome tea which was awaiting us at the farm at Tyneham.

On Monday the weather dawned not much better, and when we approached the coast near Ringstead Bay we encountered a very thick mist, and the leader considered it dangerous in view of the nature of the coast to explore it in such conditions. Thus it was that we returned to Wool and wandered through the water meadows there. Among the interesting plants were found a quantity of *Lolium perenne* × *Festuca pratensis*, *Lolium perenne*, var. *longiglume*, and a specimen having longer glumes than is usual of the hybrid *L. perenne* × *F. pratensis*, which Mr Hubbard thinks may be *L. perenne*, var. *longiglume* × *F. pratensis*. Certainly they were growing in the same field and in fairly close proximity.

Thanks are due to Mr Simpson for leading this excursion and for his admirable arrangements. As most of the coast visited can only be approached through private property, it necessitated the securing of a number of permits.

The following plants were noted in addition to those mentioned above:—

Waste ground, Parkstone: *Delphinium Ajacis* L., *Rorippa sylvestris* (L.) Sm., *Sisymbrium officinale* (L.) Scop., var. *leiocarpum* DC., *Lepidium sativum* L., *Dracocephalum parviflorum* Nutt.

Chapman's Pool: *Polygala oxyptera* Reichb., with pink flowers, *Centaurium umbellatum* Gilib., var. *confertum* (Wheld. & Salm.) Gilmour.

Pool below Swyre Head: *Callitriche stagnalis* Scop.

Between Encombe and Kimmeridge: *Samolus Valerandi* L., *Centaurium littorale* (Turner) Gilmour.

Mupe Bay: *Melandrium macrocarpum* Willk. (=*Lychnis macrocarpa* Boiss. & Reut.).

Worbarrow: *Clematis Vitalba* L., var. *integrata* DC., *Trifolium fragiferum* L., *Lotus corniculatus* L., var. with tubercle-based hairs.

July 24. Canals and Reservoirs near Tring, Herts. Leader, Mr J. F. G. Chapple.

Seventeen members and friends met at Tring station on a glorious day and proceeded to explore a piece of the Grand Union Canal at Halton. Dr Butcher was, unfortunately, prevented by an injury from jointly leading the expedition as advertised. In a garden in Tring we were shown *Epilobium adenocaulon* and *E. roseum* by Mr Brenan, who had discovered these plants the previous day—*E. adenocaulon* being a new record for v.-c. 20. In the canal at Halton were seen quantities of *Ranunculus sphaerospermus* in its only Bucks locality, *Zanniehellia palustris*, *Hippuris* and *Potamogeton crispus*. On the towpath a few plants of *Lolium perenne* × *Festuca pratensis* were seen. Proceeding to Wilstone reservoir, a fine plant of *Heracleum sphondylium*, var. *angustifolium*, was seen by the roadside, and around the reservoir a fair quantity of *Epilobium hirsutum* × *parviflorum* was noticed. In the reservoir itself a few scraps of the rare *Chara contraria*, var. *hispidula*, were dragged up, growing with *C. delicatula*. A few specimens of *Veronica Anagallis* × *aquatica* were seen

growing with the two parents in this, the locality where it was first noticed in Britain by Mr I. A. Williams. Time did not permit more reservoirs being visited, and after tea at Stocks, where the members of the excursion had been very kindly invited by Miss Margaret Brown, the party dispersed.

Other plants of interest, which were noted, included:—

Wilstone Reservoir (Herts.): *Ranunculus trichophyllus* Chaix, *Sagina ciliata* Fr., *Potamogeton lucens* L., *P. pectinatus* L.

Halton (Bucks.): *Ranunculus arvensis* L., *Erysimum cheiranthoides* L., *Agrimonia odorata* (Gouan) Mill., *Aethusa Cynapium* L., var. *agrestis* Wallr., *Solanum Dulcamara* L., var. *villosissimum* Desv., *Euphorbia exigua* L., *Potamogeton densus* L. (very abundant in the Grand Union Canal), *Avena fatua* L.

August 21-24. Frieston and the North Shore of the Wash. Leader, Dr R. W. Butcher.

The object of this excursion was to explore the northern shores of the Wash between Skegness and the River Welland. There was, among other old records, mention of *Limonium reticulatum* from Frieston Shore (Babington) and *Atriplex pedunculata*. Although careful search was made for these two plants they were not rediscovered.

The following sections of the area were explored by various members of the party: (1) Sandhills around Gibraltar Point; (2) Salt-marshes at Wrangle Tofts; (3) Salt-marshes at Frieston Shore; (4) Frampton Marsh between the Welland and the Witham; (5) Holbeach Marsh.

A list of the more interesting items in the flora is given below, the figures referring to the districts as above.

Name of Plant.	Number of districts in which seen.	Locality.
Thalictrum flavum L.	1, 3.	School Lane.
Ranunculus Baudotii Godr.	4.	Common in one dyke.
Ranunculus sardous Cr.	2.	Rare on the sea-bank.
Cochlearia anglica L.	1, 2, 3, 4.	Common.
Lepidium campestre (L.) Br.	1.	In slacks in the sandhills; rare.
Cakile maritima Scop.	1.	On the shore.
Cerastium semidecandrum L.	1.	In slacks in the sandhills.
C. tetrandrum Curt.	1.	In slacks in the sandhills.
Sagina maritima Don	1.	In slacks in the sandhills.
Spergularia marginata DC.	1, 2, 3, 4, 5.	Common.
S. salina Presl	1, 2, 3.	In bare wet places; common.
Althaea officinalis L.	1.	Marshes near the point. Near Frieston Church.
Erodium Lebelii Jord.	1.	On the sandhills.
Rubus caesius L., forma	1.	Dominant in the sandhills.
Sium latifolium L.	—	Rare, in some of the inland ditches towards Boston.
Apium graveolens L.	2, 3, 4.	Common.
Oenanthe Lachenalii C. Gmel.	1,	Marshes behind the sandhills.
Carum Carvi L.	3.	Butterwick.
Bupleurum tenuissimum L.	2, 3, 4.	Not common.

Name of Plant.	Number of districts in which seen.	Locality.
Peucedanum sativum (L.) Benth. & Hook.	1.	By the roadside.
Aster Tripolium L.	—	Common throughout the salt marshes. The rayed form was most abundant in the ditches behind the sea-wall. The discoid form was dominant on the open marshes.
Filago germanica (L.) Huds.	1.	In the slacks in the sandhills.
Gnaphalium uliginosum L.	1.	In the slacks in the sandhills.
Artemisia maritima L.	—	Both the erect flowered and drooping flowered forms were equally common and the variation was very great.
Limonium vulgare Mill.	—	Common on all the marshes.
Statice maritima Mill.	—	Common on all the marshes.
Glaux maritima L.	2, 3, 4, 5.	Very common.
Samolus Valerandi L.	2, 3,	Rare.
Plantago Coronopus L.	1, 2, 3.	Common.
P. maritima L.	2, 3, 5.	Dominant.
Chenopodium ficifolium Sm.	—	Arable land near Frieston Church.
Atriplex littoralis L. and var. *serrata* Gray	—	Both the type and the variety abundant in all the marshes.
A. patula L.	—	Common and very variable.
Salicornia spp.	—	These were not all determined, but *S. ramosissima* and *S. stricta* were the commonest. Neither *S. perennis* nor *S. dolichostachya* were observed.
Hippophaë Rhamnoides L.	1.	Common on the sandhills.
Spiranthes spiralis (L.) C. Koch	3.	On the sea-bank; rare.
Juncus Gerardi Lois.	1, 2, 3, 4, 5.	In wet places.
Triglochin maritimum L.	—	Often dominant on the marshes.
Zannichellia pedunculata Reichb.	2, 4.	In several ponds.
Ruppia maritima L.	2, 4.	In several ponds.
Scirpus maritimus L.	—	Common in the ditches.
S. Tabernaemontani C. Gmel.	1.	In ditches near the Point.
Carex distans L.	1, 3.	
C. vulpina L.	1.	In a marsh behind the sandhills.
Spartina stricta (Ait.) Roth	2, 3.	
Pholiurus filiformis (Roth) Schinz & Thellung.	2, 3, 5.	Common.

There were also many forms of *Agropyron repens* and *A. pungens* which have not yet been determined.

August 22 A party, consisting of Miss M. Brown, Miss M. S. Campbell, Mr Fred Kime (a Boston naturalist), Col. G. Watts and Mr A. J. Wilmott (leader), went southwards to explore the southern shore of the Wash east of the mouth of the River Welland. (Specimens of all plants here mentioned are in Herb. Mus. Brit.)

The country passed through south of Boston was almost entirely arable fields, and the first stop was made on the east side of Fosdyke Wash near Foster's farm, by some water just inside the sea wall. The water contained much *Ruppia* (without fruit) and around the bank was a zone of *Carex distans* about three feet high. Among a stand of

Scirpus maritimus was *Aster Tripolium* with fine rayed capitula, rather unusual in this area where the plant is usually rayless or nearly so. Crossing the sea-wall nearby a short examination of the extensive mud flats was made. The extent of these flats is probably responsible for the break-down of the zonation usually found in the salt-marshes of our coasts, for various species occur socially in small areas, especially noticeable being those of *Agropyron*. The sloping banks of the channels were covered with prostrate forms of *Atriplex hastata* mingled with other salt-marsh species, *Spergularia salina* being noticed on the sloping mud whereas the *S. marginata* was on flat wet marsh.

We went on to Holbeach St Matthew through more arable land. Nearly the whole of the inland area in these parts is cultivated, a considerable amount of Sugar Beet being grown. Except for an occasional belt of trees and an occasional pond, the field edges and ditch sides seemed to offer the only wild habitats for plants, other than the coastal belt. At Holbeach we went over the sea wall to the wide belt of marshes extending from the wall to the outer bare mud. In this outer zone people were walking about, bare-foot, on the hard bottom below about 15 to 18 inches of mud, collecting *Salicornia* for eating. They were, they said, collecting anything useful, but *Salicornia* seemed to be that day's chief haul. They did not distinguish any special kind, but collected clean well-grown *isolated* specimens of any sort. At this outer fringe *Salicornia* was the only flowering plant, but nearer the wall other species came in, the only plant worthy of note being a single clump of *Spartina Townsendii* found by Miss Brown (who had found *S. stricta* at Frieston the previous evening). The marshes were more normal than those at Frieston and Fosdyke, without the upper belt of mixed societies of various species. These upper zones are presumably so far from the open sea that they are not affected by wave action and are ready for reclamation. Mr Kime stated that a reclamation scheme is being gradually carried out using Borstal boy labour, in this Western area of the Wash. The only other plants of note at Holbeach were *Hordeum maritimum* on the seaward base of the sea-wall and a peculiar *Spergularia* (with pale green foliage, compact growth, and white flowers) on a dry slope between the sea-wall and the marsh edge. Returning to the main road via Cowfield Gould we found the " Holbeach Marsh " of the map to be also nothing but arable land. A stop to examine the weeds in the corner of a field produced nothing remarkable. *Senecio erucifolius* occurred on roadside hedgebanks, and by one drain there was a considerable amount of ×*Salix Smithiana*. *Rumex maritimus* was found at the edge of a roadside pond.

On the way back the river banks near Skirbeck were examined for signs of *Atriplex pedunculata*, but without success, the only species of interest seen being *Pholiurus filiformis*. The locality seemed quite unsuitable for the *Atriplex* and presumably the character of the area has changed. Just outside the sea wall a small low-lying area contained much *Puccinellia distans*, and the accompanying *Juncus Gerardi* was

densely covered with the white larva-cases of *Gelechia* (Mierolepidoptera).

Returning to Frieston via Fishtoft nothing more remarkable than *Polygonum amphibium* (f. *terrestre*) as a field weed was noted, except the quantities of *Althaea officinalis* at Cold Harbour near Frieston. It seems evident that nearly the whole of the area, being excellent arable land reclaimed in the past from the Wash, offers few localities in which to find plants of interest, except the foreshore, where much remains to be done with the Salicornias, Atriplices, etc. It would be neeessary to make a careful hunt for uncultivated " oases " of wild country before much worthy of record would be found inland. (A. J. W.)

OBITUARIES.

Miss Mabel Cobbe. The death of Miss Mabel Cobbe on December 31st, 1936, at Alassio was a great blow to her many friends. She had seemed very well and had just returned from a drive into the country, bringing back with her some flowers, in which she was keenly interested.

As a child she assisted her father (the Rev. Henry Cobbe, himself a good field botanist) to make a fine herbarium of Swiss plants, part of which is still extant. They also collected Lepidoptera. Later on in England and abroad she studied birds and took a great interest in gardening, especially in roses, which she pruned and budded herself, and the old Rectory garden boasted 2000 rose-trees. On summer holidays rare plants were sought and noted. In 1899 real study of British plants was begun and from that time on formed her greatest hobby. In 1913 the Herbarium was started and now consists of some thousands of sheets from practically all over England, Wales, and the Channel Islands. From 1926 her energies were turned to Continental specimens, of which there is also a very fine collection of some 3000 sheets. At Alassio, where several winters were spent, she was considered an authority on the plants of the Riviera, which were brought to her for identification. The Herbarium is going to the Bexhill Museum.

I first met her in 1902, when she and her sister were most kind and helpful to a beginner, and showed me several plants then new to me. After that we often met and had many delightful botanical excursions together, and it was a real joy to look at her dried plants, which were most beautifully mounted.—J. C. Davy.

Arthur Reginald Horwood (1879-1937). Arthur Reginald Horwood died, after a trying illness, on February 21st, 1937, at his home at Brentford. He had worked as a temporary botanist in the Herbarium of the Royal Botanic Gardens, Kew, since September 1924.

Horwood was the son of the Rev. F. E. Horwood, Rector of S. Croxton, and was born in Leicester on May 29th, 1879. He was educated at St John's Foundation School, Leatherhead, and it was in-

tended that he should enter the Indian Civil Service, but he failed to pass the medical examination. In 1902, however, he was appointed as an assistant in the Leicester City Museum and later became Sub-Curator. It was while employed at the Leicester Museum that Horwood published numerous books and papers on botanical subjects. The more important of these are " Plant Life in the British Isles " (3 vols., 1914-16), " Practical Field Botany " (1914), and " The Outdoor Botanist " (1920). When, in 1911, it was decided to publish a new Flora of Leicestershire, Horwood became general editor. Work on the Flora, however, was delayed by the war and also by the loss of his co-workers through death and other causes. Finally he had to undertake the work single-handed and to finish the Flora in time for the visit of the British Association to Leicester in 1933. A review of the Flora appeared in this Society's Report for 1933, p. 493.

Horwood left Leicester in 1922 and joined the staff at Kew in 1924. In the Herbarium he worked mainly on European and Oriental collections, and his spare time was occupied by very varied journalistic work. Although of a kindly and generous nature, he had fixed opinions as to methods of work and it was often only with difficulty that he could be persuaded to see another point of view. He will be greatly missed by the many amateur botanists who never sought his help in vain.

His large herbarium of British plants was divided between the Leicester Museum, the National Museum of Wales, and the Kew Herbarium. He was buried at Scraptoft Cemetery, Leicester, and is survived by four sons and his second wife.—A. K. Jackson.

Robert F. Towndrow (1845-1937). R. F. Towndrow, who died on Christmas Day 1937, was born on October 29th, 1845, at Malvern Link, and he spent the whole of his life in that part of Worcestershire. For many years he carried on a grocery business in Malvern Link, and when he retired 26 years ago he moved from there to Malvern Wells, where he spent the rest of his life. He celebrated his Diamond Wedding in 1929, when he was honoured by a telegram of congratulation from King George V. Mrs Towndrow, whose beautiful nature had helped him so much in their long married life, and to whom he was utterly devoted, died three years later, and he never really recovered from this loss. For many years he was a member of the Board of Malvern Hills Conservators, and he only gave up that work with advancing age.

In his earlier years Towndrow was a keen entomologist, and never lost his interest in that pursuit. Along with Rev. A. Day of Malvern Link he did much work for local entomology, and being anxious that the knowledge which W. Edwards had of this branch of the natural history of Worcestershire should not be lost, he helped to compile a list of the Lepidoptera of the County founded on his collection.

It was probably during his early thirties that Field Botany began to take the chief place in his mind, and for a great many years he was the authority for the plants of the Malvern district and other parts

of Worcestershire, and Herefordshire. His chief distinction lay in his discovery of *Sagina Reuteri* Boiss. on the platform of Great Malvern Station in 1894; of *Rosa Melvini* Towndrow at Madresfield in 1885, of which only three bushes are known to be in existence; and his rediscovery in 1884 of *Juncus macer* S. F. Gray at Cradley in Herefordshire, which had been unknown in Britain since Don's record for Scotland in 1795.

Although his knowledge of Botany was very wide and his name well known outside his own district, he published very little, except locally. For several years he contributed notes on Malvern plants to the *Malvern Advertiser*, which were later incorporated in Amphlett and Rea's *Botany of Worcestershire*, and up to within ten years of his death he read papers to the Malvern Field Club. While being especially interested in *Rosa*, *Mentha* and *Carex*, his knowledge of general Phanerogamic Botany was very wide. He was extremely well read in general literature, and made careful notes of references to English plants in such writers as Shakespeare and Tennyson. If we consider how brief must have been his leisure hours when he was actively engaged in business, we cannot but marvel at the breadth of his interests and the amount of work that he accomplished in them. His Herbarium is in the Malvern Free Library.

With his modest and unselfish character, he was always ready to put his knowledge at the service of others and to contribute notes of his own researches. In fact, he would rather be inclined to give to others the credit for what he had done himself. It was in recognition of work of this sort that he was elected an Associate of the Linnaean Society in 1915. He contributed largely to Purchas and Ley's *Flora of Herefordshire*, especially in connection with the Roses of the Malvern neighbourhood. It is interesting to note that working with the late William Wickham, the geologist, on the relation of plants to soil, he anticipated some of the points of the later study of ecology.

Good botanist though he was, Towndrow's name will live, to all who knew him, for his personality and character, which was most generous and beautiful. He was completely unselfish and would never say a harsh or unkind word of anyone, while he was at the same time enlivened by a keen sense of humour. To the beginner in Botany he was not only a mine of information but an ever-ready source of help and encouragement; he was always glad to put his knowledge at the service of others, and even when correcting wrong identifications he was able to add a note of encouragement and congratulation. There are many who will always carry with them grateful recollections of walks which not only formed a foundation for the study of plant life but gave them an insight into the life of a great gentleman of truly saintly character.—F. M. Day.

John Grimshaw Wilkinson (1856-1937). John Grimshaw Wilkinson was born in Leeds on January 6th, 1856. He began life as a grocer, devoting his spare time to painting. A serious illness left him totally

blind at the early age of twenty-three. His interest in Botany was later aroused when, on an excursion with a friend, he was given a leaf from a beech tree he had known. This he examined with his fingers and tongue, committing its details to memory. This led to a study of the leaves and flowers of other plants until he ultimately achieved a remarkable power of identification from touch, taste, and smell, and became widely known as "The Blind Botanist." Throughout his earlier botanical studies he was assisted by his mother, who read him descriptions from Floras. These were carefully memorised, his powers of memory becoming scarcely less remarkable than his sensitiveness of touch and acuteness of hearing.

He was specially interested in British and foreign trees and shrubs and claimed to know over 1000 species and varieties in the public parks and private estates within a 20 mile radius of his house. His work on these plants brought him into contact with the City Corporation, whom he advised on the planting and labelling of trees in the public parks of the city. As an appreciation of this service and his remarkable achievements an honorary M.Sc. was conferred upon him by the Leeds University in 1915.

He died on February 28th, 1937, in his 82nd year, his herbarium and books being left to the Leeds University.—W. A. Sledge.

EDITORIAL NOTES.

Patrick M. Hall, Hon. Editor.

In the Report for 1936 members were invited to make suggestions for the improvement of the Report, either in the way of contents or arrangement. The amount of criticism received under these headings was small and was limited to a few members who found the arrangement of "Abstracts" difficult to follow. The Editorial Sub-Committee feel that this is a valuable feature of the annual Report, forming as it does a guide for members to a mass of information on various aspects of British Botany. The system of references has been carefully thought out and it is considered that, with careful attention to the notes provided, readers should not experience difficulty in understanding the system.

In connection with the subject of arrangement, it will be noticed that a slight change has been made this year in the form in which "Plant Records" are presented. The form now adopted is simpler and more economical in printing than that formerly in use.

A more serious criticism, and one which has been made on previous occasions, is in connection with the late appearance of the Report. It is suggested that the contents of the Report were to some extent "stale news," but this is bound to be the case with any Report designed primarily to record the activities of the previous year. Admittedly the appearance of the Report at the commencement of the collecting

season would be most valuable. The Editorial Sub-Committee are well aware of this and are most anxious that the Report should, if possible, appear earlier in the year than has been the case. Two factors, however, have to be taken into consideration. A large part of the Report is a digest of an enormous number of facts, the data collected during the previous season. The collecting season itself extends well into the autumn, and in many cases it is only then that the plants are carefully studied and worked out. It will be seen, therefore, that a considerable period must elapse for the whole of the contents of the Report to reach the Editor. The second, but not lesser, consideration is the question of accuracy. Time could no doubt be saved if every contribution were printed as submitted, but this does not commend itself to the Sub-Committee, who are determined to maintain, and, if possible, improve upon, the standard of accuracy (in such matters as identification, nomenclature, etc.) which was attained in the 1936 Report.

I am glad to have this opportunity of expressing my thanks to many members of the Society for their help, to Mr Chapple and my colleagues on the Editorial Sub-Committee for unfailing co-operation, particularly to Mr Corstorphine, whose constant advice in connection with the technical production of the Report is invaluable.

Plant Records. All records should give the following data:—

(a) The specific (and, where applicable, varietal, etc.) name.
(b) Locality and Watsonian vice-county (the county alone will not suffice).
(c) Date.
(d) Name of finder, if not the person submitting the record.
(e) If the plant belongs to a critical group, the name of the expert by whom it was determined: if the plant has not been named by an expert, a specimen must be sent for determination. Records in critical groups will not be published unless this procedure has been complied with.
(f) If material has been dried, the Herbarium in which it is kept, so that it may be traced if required for study.
(g) Information as to the status of the plant (whether native, naturalised or casual), habitat, altitude, soil, etc., is desirable.

. . . . . .

The latest date for the acceptance of **Notes, Records,** and **Papers** is **January 31st** in each year: all such communications should be addressed to the **Hon. Editor.**

(*Authors of papers are allowed 25 reprints gratis and further copies at cost price.*)

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Plants for naming should be sent in **tins** to the **Hon. Secretary.**

PERSONALIA.

FLORA OF THE ISLES OF SCILLY.

The last separate account of the Flora of the Isles of Scilly appeared in 1864. Since that date the introduction of the Spring Flower industry and increased commerce has effected many changes in the plant-life, and it is to be expected that the compilation of a new Flora will provide a most interesting comparison. Mr J. E. Lousley, 7 Penistone Road, Streatham Common, London, S.W.16, will be pleased to receive any records or other data, and references to publications (other than the *Journal of Botany* and *B.E.C. Reports*) dealing with the Botany of these Islands.

FLORA OF THE OUTER HEBRIDES.

Miss M. S. Campbell, c/o Department of Botany, British Museum (Natural History), Cromwell Road, London, S.W.7, again appeals for any information on the Flora of the Outer Hebrides (other than that contained in the *Journal of Botany*, *Annals of Scottish Natural History*, and the *B.E.C. Reports*). She requests that any specimens recently collected be sent to her for comparison with Herb. Mus. Brit. and for confirmation of old records, and is particularly anxious to get into touch with any botanists who may be contemplating visits to v.-c. 110 in the near future.

The work on the Flora is progressing satisfactorily, and Miss Campbell thanks those members who kindly responded to her previous appeal.

THE PROGRAMME OF EXCURSIONS

arranged for 1938 was sent out to all members with the notices of the Annual General Meeting.

NOTICE.

THE 1938 CONVERSAZIONE

will be held at the Great Central Hotel, London, on Wednesday, November 16th, from 3 to 6 p.m.

Arrangements as in previous years. Tickets, price 3/6 per head, including tea, may be had on application to

Mrs Foggitt, Stoneybrough, Thirsk, Yorks.

Please enclose cheque or postal order, and stamps for reply. A few friends may be invited.

PLANT NOTES.

[In the case of direct contributions the name of the author of the Note is printed in small capitals. Where the name of the author is not in small capitals, and is coupled with a date (the name and date, or date alone, being bracketed), the Note is an Abstract, its origin being ascertainable by reference to the Bibliography.—Ed.]

3/2f. Anemone nemorosa L., var. **grandiflora** Rouy & Foue. 8, S. Wilts; near Redlynch, 1933, Gullick (1937, 82), det. Kew. "Plante plus robuste; feuilles plus largement lobées; fleurs très grandes, atteignant 7 centimètres de diamètre": R. & F., *Fl. Fr.*, *1*, 44 (1893). Milne-Redhead and Turrill in *J.B.*, *70*, 325-328 (1932) describe specimens from S. Hants which they refer to this variety rather than to var. *robusta* Salisb., although they were "unable to find any sharp line of demarcation between these two described varieties."

6/33. Ranunculus Ficaria L. A curious form was noticed at Oaksey, N. Wilts (7) in 1932-5. It has apetalous flowers and numerous small trilobed leaves apparently intermingled with the sepals. Fascicles of similarly-formed leaves sprang from the axils of the upper leaves. A root was transplanted to Potterne by Mr E. M. Marsden-Jones and the plant has remained true.—Grose (1937, 87).

36. Barbarea Br. An account of the Swedish species is given (with details of distribution) by Lange (1937). *B. arcuata* (Opiz) Rchb. is separated from *B. vulgaris* R. Br., and hybrids are recognised. The characters used in the key are:—

Siliques straight, on ascending pedicels, ± tightly appressed to the stem and with c. 3 mm. long style. ... *B. vulgaris.*
Siliques arcuate-ascending on spreading pedicels, standing out from the stem and with c. 2 mm. long style. *B. arcuata.*

[The plant called *B. vulgaris* seems to be merely the var. *silvestris* Fries: *cf.* Jackson, 1916: *J.B.*, 206.—A.J.W.]

80/1c. Raphanus Raphanistrum L., var. **aureus** Wilmott. See p. 539.

85/3. Reseda Luteola L. One of several abnormal plants growing at Newhaven, E. Sussex, v.-c. 14, was sent to Kew, whose reply was:—"The specimen shows a much more condensed inflorescence than is normal in this species. The flowers themselves show little abnormality except for increase in carpel number. Such contracted inflorescences are familiar to botanists, though the cause is unknown, but it may be an expression of some form of fasciation."—L. A. W. Burder.

96/2. Silene Cucubalus Wibel. A small reddish form with deformed organs from Newhaven, E. Sussex, v.-c. 14, was thought pos-

sibly to be var. *rubra* DC. Specimens were sent to Kew, and the reply was: "The *Silene* is *S. Cucubalus* Wibel. The variation in the colour of the specimens is due to an attack by the fungus, *Ustilago antherarum* Fr. This fungus attacks the anthers and produces its spores there in place of pollen."—L. A. W. Burder.

101/3b. Stellaria apetala Ucr., var. **glabella** (Jord. & Fourr.) Rouy & Fouc. A form characterised by its glabrous sepals, which should perhaps be referred as a variety to *S. pallida* (Dum.) Piré (*S. Boraeana* Jord.). Alderney; Mannez Quarry, 1934. Not previously recorded for the British Isles but apparently not uncommon.—Jackson, Jackson, and Airy-Shaw (1937, 299).

117/3. **Malva neglecta** Wallr. (*M. vulgaris* Fries; *M. rotundifolia* auct. angl.) and 117/4. **Malva rotundifolia** L., p.p. (*M. pusilla* With.; *M. borealis* Wallm.). These are the correct names for these two species according to Morton (1937), who gives a key to these two species, *M. nicaeensis* All., and *M. parviflora* L. There are specimens of *M. neglecta* from Wallroth in Herb. Kew.

185/3. **Rubus scissus** W. Wats., "nom. nov." *R. fissus* Leight., *Fl. Shropsh.*, 225 (1841); *R. fissus* Rogers, *Handb. Br. Rub.*, 20 (200); *R. fissus* Focke, *Synop. Rub. Germ.*, 109 (1877), excl. citations of Babington's descriptions; non *R. fissus* Lindl. 185/4. **Rubus fissus** Lindl., *Synop. Br. Fl.*, ed. 2, 92 (1835), is the correct name *vice R. Rogersii* Lint. Lindley's name has been universally misapplied. Lindley intended this name to replace *R. fastigiatus*, a name which he had wrongly used for a Scottish bramble in ed. 1 (1829). His specimen labelled *R. fastigiatus* is still in Herb. Lindley and is the same bramble as that afterwards described by Linton as a new species, *R. Rogersii*.—Wm. Watson (1937 A, 162-163).

185/14c. **Rubus londinensis** (Rogers) n. sp. and comb. nov. (Section *Discoloroides*, Series *Imbricati*). *Turio* robustus, ramosus, obtusangulus, sulcatus, altus, arcu decurvus et apice radicans, primo pubescens demum calvus, perennis. *Aculei* remoti sed nonnulli geminati, longi, lanceolati, recti vel ascendentes. *Folia* majuscula, quinato-digitata; *petiolus* supra leviter canaliculatus, aculeis falcatis armatus; *foliola* omnia contigua vel vix imbricata, convexa, longi-petiolulata, supra strigosa, subtus ± discolora, late raro profunde serrata; *foliolum terminale* cordatum, suborbiculare vel interdum potius subquadratum, cuspidatum.

Ramus florens obtusangulus, pubescens, infra glaucescens; aculei subter paniculam recti vel declinati; *folia* ternata vel quinata, superiora ± discolora, foliolo terminali obovato-oblongo. *Panicula* eglandulosa, ampla et aperta, truncata, pubescenti-tomentosa, aculeis gracilibus paucis vel subnullis munita; *ramuli medii* saepe longi, cymoso-partiti, 5-7-flori, subinermes. *Sepala* pubescentia, cano-virentia, tomentosa, obtuse carinata, appendiculata, reflexa. *Petala* magna, late ovata vel obovata,

emarginata, ad basin attenuata, roseola. *Stamina* alba stylos pallidos longe superantia; antherae glabrae vel subpilosae; germina pilosa; receptaculum pilosum.

Type specimen in Hb. W. Watson, Bickley, Kent.

Synonym, *Rubus imbricatus*, var. *londinensis* Rogers in *Journ. Bot.*, 1903, p. 89.

Distribution: Surrey, W. Kent, N. Essex.—Wm. Watson.

185/23b. Rubus cardiophyllus L. & M., var. **fallax** W. Wats., "var. nov." This is a small genetic form, which has white or at first faintly pinkish flowers, leaflets shortly acuminate nearly equally serrulate, a narrow closely felted and pubescent panicle, armed with many short but unequal straight rarely slightly falcate prickles, terminal leaflet of the upper ternate leaves on the flowering branch obovate-cuneate, the lower branches of the panicle equalling the petioles of the subtending leaves. It has been frequently identified with *R. Bakeri* F. A. Lees (=*R. Selmeri* Lindeb., var. *microphyllus* Lindeb., see below), which has sprawling stems, strongly curved prickles on the panicle rachis stem and petioles, thinly hairly panicle rachis, short stamens, pink petals, etc. It is at present known from v.-cc. 9, 12, 13, 16, 17, 39, 62, H.16.—Wm. Watson (1937 A, 161-162). [This is an example of the difficulty experienced in attempting to keep the *British Plant List*, ed. 2, posted up and emended in accordance with the additions and changes of nomenclature in a genus such as *Rubus*. This variety is numbered 185/23b, although the name *R. cardiophyllus* appears in the List under the number 185/25, because the plant to which Watson applies the name *R. cardiophyllus* L. & M., *R. rhamnifolius* W. & N., appears in the List as 185/23. Such cases are bound to occur until there is a complete revision of the List.—Ed.]

185/24(2). **Rubus cambrensis** W. Wats., "sp. nov." Series *Silvatici*. *R. glabratus* W. Wats. e descr. in *B.E.C. 1929 Rep.*, 169 (1930); non *R. glabratus* H. B. K. (1823). This bramble, which has been treated as a variety of *R. nemoralis* P. J. Muell., should stand as an independent species.—Wm. Watson (1937 B, 195-196).

185/24(3). **Rubus Silurum** (A. Ley) W. Wats., "sp. nov." Series *Silvatici*. This bramble has also been subordinated to *R. nemoralis* P. J. Muell., but is a species distinct from it and from *R. cambrensis*.—Wm. Watson (1937 B, 197).

185/33(2). Rubus similatus P. J. Muell., *Versuch* no. *50* (1859); Boulay in Rouy & Camus, *Fl. Fr.*, *6*, 54; *R. sylvaticus* Wirtg., *Fl. preuss. Rheinpr.*, 154 (1857), and *Hb. Rub. rhen.*, I no. 41, II no. 20; *R. villicaulis* var. Focke, *Syn. Rub. Germ.*, 209 (1877); *R. pyramidalis*, var. *similatus* Sud., *Rub. Eur.*, 46 (1908-1913), tab. L, f. 8.

This bramble is known to occur on the Continent, near Cherbourg, near Nancy, and on the summit of the Montabaurer Höhe, near Cob-

lentz. It has not hitherto been reported for Great Britain. I have known it for many years in Surrey, in several places between Croydon, Shirley and Selsdon; and recorded it, erroneously, as *R. calvatus* Bloxam, for Addington Hills, in the *London Naturalist* for 1927, page 15.

In Hb. Mus. Brit. there is a specimen of *R. similatus* which was collected by de Crespigny from a hedge bordering Croham Hurst, near Croydon, in 1872. It was determined by him, doubtfully, as *R. macrophyllus*, var. *glabratus* Bab. Rogers subsequently examined the specimen and said " perhaps a glabrous form of *R. macrophyllus*," but later (1890) " the connection with *macrophyllus* seems very doubtful."

In Hb. Kew there are specimens of the same bramble sent by Mr Edward Langley from near Woburn, Bedfordshire, where Rogers is said to have seen it abundantly. It was determined by Rogers provisionally as *R. Salteri* Bab., forma.

I have seen *R. similatus* once or twice in cultivation in England, and it is offered in catalogues as " Edward Langley." From enquiries that I have made, and from a note by Langley on the specimen at Kew, it appears that the cultivated bramble came from Bow Brickfield near Woburn.

I have grown the bramble from Addington Hills. The fruit is not large but has a pleasant aroma. I think it is closest of all to *R. mercicus* Bagn.

Mueller identified Wirtgen's specimens from the Montabaurer Höhe doubtfully as *R. incarnatus* P. J. Muell. (see *Pollichia* for 1859, pp. 95 and 294), but they do not agree with Mueller's description of *R. incarnatus*.

The following brief description of *R. similatus* is made from the Surrey plant.

Stem green to red, obtuse-angled, hairy, with scattered very short glands and rather short patent to falcate prickles. Leaves quinate, at first slightly strigose above and pilose on the veins beneath, but becoming nearly glabrous above and below. Terminal leaflet roundish ovate to elliptical, acuminate, base nearly entire, margin serrate-dentate, the principal teeth salient and often patent. All leaflets becoming convex and rugose. *Flowering branch* long, hairy, armed with strongly curved prickles, the upper simple leaves greyish felted beneath. Panicle leafy below, elongate, almost equal, the stronger branches sometimes divided to the base, inconspicuously glandular. Petals pinkish, elliptical, emarginate. Calyx truncate below, aculeolate and glandular. Sepals long-pointed, greenish-grey with a white margin, patent after flowering. Stamens white, about as long as the red styles. Carpels pilose. Receptacle pilose.

The habit is slender and recalls *R. pallidus*, as does also the red-styled flower. The underside of the petals where they have been exposed between the opening sepals is flushed with red.—Wm. Watson.

185/37b. Rubus Selmeri Lindeb., var. **microphyllus** Lindeb. in *Hb. Rub. Scand.*, no. 34 (1884). *R. Bakeri* F. A. Lees. *R. pistoris* Bart. &

Ridd., excluding specimens from Brandon Wood, Warwick, v.-c. 38, and Fradley, Staffs, v.-c. 39. This small form of *R. Selmeri*, which is found growing with the typical form in some localities, was described from an island lying off the south-west coast of Norway, in a region in which *R. Selmeri* is also found. This small form has also been found at Minden in N.W. Germany, where Weihe had already discovered the larger form. It is at present known from v.-cc. 16, 22, 38 (Sutton Park, *Bagnell*, 1873, in Herb. Bab., not Brandon Wood, *Riddelsdell*, 1922), 41, 58, 62, 63, 67 or 68, 98, H.38.—Wm. Watson (1937 A, 160).

185/41(2)b. **Rubus sciaphilus** Lange, var. **microphyllus** (Frid. & Gel.) W. Wats., " comb. nov." The variety is based on *R. sciaphilus* Lange, f. *microphyllus* Frid. & Gel., *Bot. Tidsskr.*, *16*, 73. This is a small variety analogous and rather similar to *R. cardiophyllus* L. & M., var. *fallax* W. Wats. (see above), from which it may be distinguished by its leaves green beneath, aciculate and glandular green sepals, pyramidal panicle becoming corymbose by the lengthening of lower axillary branches.—Wm. Watson (1937 A, 162).

185/53(2). **Rubus mundiflorus** n. sp. (*Silvatici*, Series *Sprengeliani*). *Turio* subteres, ex arcu humili procumbens, pilosus, parce glandulosus; *aculei* parvi vel mediocres, declinati, sat numerosi. *Folia* caulina ternata, quinata, pedata, mediocria; petioli patenter pilosi, sparsim glandulosi. *Foliola* omnia breviter petiolulata, inaequaliter serrata, supra opaca, pallide viridia, subtus praecipue in venis pilosa; *terminale* ovatum, suborbiculare, breviter acuminatum, basi emarginatum.

Ramus florens paene teres, flexuosus, dense breviter pilosus; aculei perpauci parvi, declinati vel falcati. *Inflorescentia* lata, sursum angustata truncata; *ramuli medii* patentes cymosi (ex quibus unus saepe hemicymosus vel duo oppositi) 4-7-flori; *pedicelli* longi, pilosi, parce glandulosi, subinermes. *Flores* parvi; *petala* suborbicularia, subito unguiculata, tandem plane aperta atque adeo ad latera revoluta, rosea; *sepala* cano-virentia, albomarginata, pilosa, glandulosa, vulgo in apice lineari producta, sub anthesi et postea patentia; *stamina* alba, vel ad basin rosea, primum quam styli multo breviora. *Germina* pilosa.

Rubus axillaris Lej. (*R. scanicus* Aresch.), for which I have previously taken this bramble, differs in its larger flowers, its foliaceous-tipped sepals, its larger and more coarsely toothed leaflets, with the more prominent teeth patent to recurved, and especially in the constantly much less developed, more leafy panicle.

Type specimen in Hb. W. Watson, at Bickley, Kent, ex Netley Heath, Surrey.

Distribution: Netley Heath, Surrey, abundant; Marc Hill, Witley, Surrey, in one spot, *W.W.*: Burnham Beeches, Bucks., in one spot, *G. C. Druce* and *J. Chapple*, *W.W.*; Shotover Hill, Oxon., in one spot, *N. D. Simpson* and *W.W.*—Wm. Watson.

185/66d. Rubus pyramidalis Kalt., var. **parvifolius** (Frid. & Gel.) W. Wats., " comb. nov." Based on *R. pyramidalis* Kalt., f. *parvifolius*

Frid. & Gel., *Bot. Tidsskr.*, *16*, 86. Bewdley, Worcs., v.-c. 37, *Gilbert* in Herb. Kew, determined by Rogers as *R. rhamnifolius* Weihe & Nees, subsp. *Bakeri* F. A. Lees. Fradley, Staffs., v.-c. 39, *Bagnell*, 1897, Ref. No. 4036, determined by Barton and Riddelsdell as their *R. pistoris*.—Wm. Watson (1937 A, 160).

185/69. **Rubus leucostachys** Smith. Since the time of Babington and Bloxam it has been taken for granted that *R. leucostachys* Sm. and *R. vestitus* Weihe are identical, and the only point in dispute has been as to which is the correct name. Specimens which are clearly Smith's type-specimens are in Herb. Smith. These are not *R. vestitus* but a distinct species which is frequent in S.E. England. This was described in *B.E.C. 1927 Rep.*, 503 (1928), under the later synonym *R. leucotrichus* Sudre.—Wm. Watson (1937 B, 198-200).

185/71×47. **Rubus macrothyrsus** Lange × **ulmifolius** Schott. See *B.E.C. 1936 Rep.*, 398, 1937.

185/88(2). **Rubus vectensis** W. Wats., "nom. nov." Series *Apiculati*. *R. Borreri* Rogers, *J.B.*, *30*, 270 (1892), e descr.; *R. Borreri* Focke, *Rub. Eur.*, 232; *R. Borreri* Sudre, *Rub. Eur.*, 120; non *R. Borreri* Bell Salter, *Ann. Nat. Hist.*, *15*, 34, nec W. Watson, "London Naturalist" for 1930, 72. *R. Borreri* Salt. is without doubt only *R. Sprengelii* Weihe, as was recognized by Salter himself. In Herb. Borrer there is a specimen named *R. Borreri*, collected by Salter in the Isle of Wight in 1845. This specimen is not *R. Sprengelii* and does not agree with Salter's description of *R. Borreri*. Rogers used this specimen for his description of *R. Borreri* in *J.B.*, *30*, 270 (1892). A new name is required for this species of which specimens have been seen from v.-cc. 9, 10, 13, 14, 16, 34, 35, 36, H.1, and from Guernsey.—Wm. Watson (1937 B, 197-198).

185/89. **Rubus rotundifolius** (Bab.) Blox. apud Kirby. This name should not appear under *R. hirtus* W. & K. (as 185/140b. in the *Br. Pl. List*, ed. 2) but should be substituted for *R. Drejeri* G. Jens. See p. 569 below.—Wm. Watson.

185/91. **Rubus Leightoni** Leighton, *Fl. Shropsh.* (1841). This is the oldest name for this species, which was placed next to *R. radula* Weihe by Leighton, and supersedes the later synonyms *R. linguiformis* Genev., *Mém. Soc. Acad. Maine-et-Loire*, 63 (1860), *R. ericetorum* Lefv., *Bull. Soc. Bot. Fr.*, 223 (1877), and *R. radula* subsp. *anglicanus* Rogers, *Handb. Br. Rubi*, 63 (1900). This species, which has been much confused with *R. sectiramus* W. Wats., has been seen from v.-cc. 3, 9, 10, 11, 17, 31, 38, 40 and 55.—Wm. Watson (1937 A, 156).

185/100. **Rubus phaeocarpus** W. Wats., "nom. nov." Series *Apiculati*. *R. Babingtonii* e descr. in Rogers, *Handb. Br. Rubi*, 69 (1900), non Salter. The specimen on which Salter founded his *R. Babingtonii* is still in Herb. Br. Linn., and is only a strong example of *R. scaber*

Weihe & Nees, as was admitted by Babington in *Br. Rubi*, 187 (1869). The name *R. Babingtonii* Salter should have dropped out of use, but unfortunately Rogers in his " Handbook " applied the name to a different bramble, for which it is necessary to find a new name.

The variety *phyllothyrsus* (Frid.) of " *R. Babingtonii* " Rogers stands for a bramble from Crowell Hill, Oxon, which is *R. festivus* M. & W. The Surrey bramble once identified as *R. Babingtonii*, var. *phyllothyrus*, is a different species, *R. formidabilis* L. & M.—Wm. Watson (1937 A, 156-157).

185/102(2). **Rubus Turneri** W. Wats., " sp. nov." Series *Grandifolii*. Most nearly allied to *R. Lejeunei* Weihe & Nees, from which it is distinguished by having leaves green beneath with the leaflets sharply lobate-serrate and very shortly stalked, by the absence of long prickles on the panicle, by the crowded and leafy panicle with ascending lower branches, by the white flowers, long linear-pointed sepals and other characters. The species is founded on specimens in Herb. Smith from Dawson Turner and Borrer from Rydal Woods, Westmorland. It is also recorded from v.-cc. 2 and 72.—Wm. Watson (1937 A, 158-160).

185/108(2). Rubus thyrsiflorus Weihe. A full description of this species is given by Wm. Watson (1937 B, 201-202). It is especially frequent in the woods of Buckinghamshire and occurs elsewhere in S.E. England.

185/115. Rubus scaber Weihe & Nees. As described by the authors the sepals are reflexed after flowering but this character must have been noted very soon after the fall of the petals. In British *scaber* the sepals are sharply reflexed in flower, but rise very soon after flowering to patent and erect. This is in agreement with Focke's description of German *scaber*.—Wm. Watson (1937 A, 158).

185/145. Rubus tereticaulis Rogers, non P. J. Mueller. The *R. tereticaulis* of Rogers' " Handbook " was based on E. F. Linton's Norfolk specimens identified by Focke. Linton's specimens differ irreconcilably from Mueller's description and from authentic specimens of his *tereticaulis*. They also differ from *R. Menkei* Weihe, with which they were identified by Sudre. Linton considered it to be a form of *R. Bellardii*, presumably var. *dentatus* Bloxam, the only form then named. This is synonymous with *R. scaber* Weihe & Nees and re-examination of Linton's specimens and of fresh specimens from his Norfolk localities show them to be *R. scaber*. The name *R. tereticaulis* P. J. Mueller should not be retained in the British list.—Wm. Watson (1937 A, 157-158).

185/149(2). **Rubus myriacanthus** Focke, *Abh. Naturw. Ver. Brem.*, 467 (1871). The Corylifolian bramble generally identified as *R. diversifolius* Lindl. [185/149d. of *B.P.L.*, ed. 2] does not agree with Lindley's

descriptions or specimens. *R. diversifolius* Lindl. is merely a later synonym of *R. vestitus* Weihe and must be dropped in favour of Focke's name.—Wm. Watson (1937 B, 200-201).

189/1. Potentilla fruticosa L. The well known colony 1½ miles S.W. of Ballyvaghan, Clare, v.-c. H.9, was visited on June 13th, 1937, in the company of Dr R. C. L. Burges. It was noticed that the flowers occurred in two forms: (1) the common form with obovate deep golden yellow petals, rounded at the apex, 10 to 12 mm. long; (2) an unfamiliar form with deep chrome-orange mucronate petals, 5-6 mm. long and shorter than the calyx. The two forms occurred on distinct bushes, and the second was the less common. Hooker remarks: "In Teesdale the flowers appear to be functionally 1-sexual; the sexes differ in appearance" (*Student's Flora*, 124, 1884), but no sexual differences could be distinguished between the Ballyvaghan forms. In Herb. Mus. Brit. flowers similar to the second form appear on two sheets: (a) A specimen from J. Dickson's "Hortus siccus Britannicus, 1793-1799" marked "Gardens," and (b) from "Border of Lough Corrib, Galway, June 1832," ex Herb. R. J. Shuttleworth, which bears both the ordinary form and the variation on the same sprig. It may be added that when in Teesdale about six weeks later two colonies of *P. fruticosa* were examined but only flowers of the first form were found, but it was noticed that here the petals were uniformly paler than at Ballyvaghan.—J. E. Lousley.

191/1. Agrimonia Eupatoria L., forma albiflora Caspary. 34, W. Gloster; about 20 plants on a grassy roadside bank of a deep rhine, Oldbury Lane, 1927-9, E. Nelmes. This plant, not previously recorded outside E. Prussia, has been grown at Kew and breeds true to the white colour, see *J.B.*, *67*, 341 (1929).—Sandwith (1937, 176).

194/5m. Rosa stylosa Desv., var. **congesta** (Rip.) R. Kell. Now for the first time published as British. It differs considerably from all previously-known British varieties of this species in its distinctly biserrate leaflets and hispid-based styles. Its nearest (or rather least distant) British relative is var. *Garroutei* (Pug. & Rip.) Rouy, a far from satisfactory, ill-defined, rare inhabitant of southern England, obviously regarded with little favour by Wolley-Dod in his "Revision of the British Roses." The first definitely accepted record of var. *congesta* in Britain was made from specimens collected by my sister, Mrs C. L. Wilde, near Thetford, W. Norfolk, v.-c. 28, 9th September 1934. (Ref. No. in my herbarium is R.1603.) The description in Keller's *Synopsis Rosarum S. E. M.*, p. 168, shows Mrs Wilde's gathering to be an unusually good fit, as Roses go. The whole gathering has been submitted to Col. Wolley-Dod, who confirms my diagnosis, only slightly qualifying his agreement by remarking that "only the best fruits show undoubtedly hispid styles." On this point, I must add that, despite late gathering with consequent weathering, a good proportion of the 40 or more fruits show ± hispidity at bases of styles.

A Rose (also, like that above-mentioned, with eglandular peduncles) collected by me at Upton Heath, Northamptonshire, v.-c. 32, 12th September 1932, Ref. No. R.1131, was submitted to Col. Wolley-Dod, soon after its gathering. He then thought that it might " perhaps go under *R. stylosa*, var. *virginea* (Rip.) Rouy," though its leaflets were biserrate, and weakly pubescent on midribs. Further careful examination now reveals that the styles on some of its fruits are slightly hispid at their bases. In the light of experience gained from the Thetford *congesta*, I think it highly probable that the Upton Heath Rose should also come under that variety, as a less typical form, with leaflets scantily pubescent and with styles decidedly less hispid.

Yet another similar Rose, collected by Mr Hugh Phillips, near Felmersham, Beds, v.-c. 30, in October 1936, very late gathered and almost defoliated, submitted to me by Mrs Macalister Hall, is quite probably var. *congesta*, but further good material must be obtained before this can be confirmed.

These three gatherings seem to suggest that careful search may reveal further stations for var. *congesta* in our Eastern and East Midland Counties, and I shall be very pleased to examine any specimens of *R. stylosa* which may seem to fit that variety, in biserrate leaflets, eglandular peduncles, and hispid-based styles.—E. B. Bishop.

194/10×18. Rosa dumetorum Thuill. ? × R. obtusifolia Desv. All Stretton, Salop, v.-c. 40. Coll. H. J. Burkill, 9th and 13th September 1937. (Ref. No. R.2004). Leaflets uniserrate, pubescent on both sides, small; peduncles eglandular; fruit small, perhaps ovoid, but almost all ill-formed (suggestive of hybridity); styles glabrous. When fresh, there was a strong vinous suffusion over the whole gathering. This was much in evidence on prickles, flowering branches, stipules, bracts and fruit, even on teeth of serrations of leaflets. Both Col. Wolley-Dod and I agree that it is probably a *R. dumetorum* hybrid, and (by a process of elimination) can only suggest that *R. obtusifolia* is the most likely other parent. Clearly, *R. dumetorum* is the dominant partner, and obviously it is not one of those already named hybrids of which that species is assumed to be a parent. From above description and assumed parentage, circumstantial evidence seems to favour one parent being a glabrous-styled *dumetorum* (say var. *calophylla* Rouy) and the other a uniserrate-leafleted *obtusifolia*. Under the latter category our only British var. is *typica* W.-Dod, but that has hispid styles. So there we must leave it for the present, trusting that Mr Burkill will be able to give it further attention in 1938.—E. B. Bishop.

196/1s. Crataegus monogyna Jacq., var. **stricta** Loddiges. 34, W. Gloster; Nupdown, 1932, E. Nelmes: " looking like a hedgerow pear tree."—Sandwith (1937, 177).

282/1. Daucus L. The wild forms of the section *Carota* are monographically dealt with by Onno (1937). *D. maritimus* With. non Lam.

is named *D. gingidium* L., subsp. *Fontanesii* (Thell.) Onno, which has an Atlantic-W. Mediterranean distribution. The subsp. *gummifer* (All.) Onno is confined to the Western Mediterranean. [This confirms my view that the British plant is distinct from the type specimens of *D. gummifer*, which I borrowed many years ago.—A.J.W.] The British *D. Carota* is subsp. *Carota* (L.) Thell. "N. Temperate zone of the Old World," the other three subspecies of *D. Carota* having a more southern distribution.—A. J. W.

296/4d. Galium hercynicum Weig., var. **riparium** Rouy, *Fl. Fr.*, *8*, 41. Plants gathered from side of ditch, near Hutton Cross, near Preston, S. Lancs., v.-c. 59, H. E. Bunker, June 1937, belong to this variety, as do plants gathered at Odiham Wood, N. Hants, v.-c. 12 (C. E. Palmer in Hb. Druce).

The following description has been drawn up from the Lancashire specimens:—

Stems ascending, 30-40 cm., internodes 65-90 mm., leaf-whorls distant, leaves six, linear-oblanceolate, acute or somewhat cuspidate, (7)-10-13×2-2¾ mm., six to nine times shorter than the internodes. Panicle narrow, 15-25 cm., branches erect, shorter than adjacent internodes, pedicels erect, cymes few-flowered.—C. E. Britton.

393/2. **Arctium vulgare** Hill. This is the correct name of the middle-sized species of the three British Burdocks. It is very variable in height and colour but always has the mature fruits uncovered (as in *A. Lappa*) with spreading phyllaries. Four main forms occur:—

A. *A. vulgare* proper, with stalks to the heads both above and below, generally very long. Plant usually reddish. Western distribution.
B. Sub-var. *pycnocephalum*, with almost, but never absolutely, sessile heads. Colour variable. Prevailing form from Essex to Shetlands.
C. Forma *viride* "forma nova." A short compact form, with greyish leaves and greyish green coloration. Sporadic.
D. Forma *subtomentosum* Evans (*A. pubens* Bab.). Like C. but with densely arachnoid heads. Locally common.

A. Lappa is easily recognized in the young state by its bright green colour, round-ended leaf, and solid petiole.

In *A. minus* the phyllaries always close over the fruits when the plant is mature.—Evans (1937).

416/5h. Crepis capillaris L., var. **glandulosa** Druce. See p. 545.

423/54(2). Taraxacum duplidentifrons Dahlst. Identified by Haglund, 1937, with **T. Raunkiaeii** K. Wünstedt in C. Raunkiaer, and distribution given as England (Herts: Dunstable, E. M. Macalister Hall), Scotland (Argyll, Orkney), Germany, Denmark, Norway and Sweden.

425. Lactuca L. Stebbins (1937), after a study of nearly all species involved, has concluded that *Lactuca* should be maintained in the broader sense as defined by Beauverd—i.e. to include *Mulgedium* and other genera. He has found it necessary to redefine this and certain other genera nearly related to *Crepis*. The following may be considered the most important diagnostic characters of *Lactuca*:—

(1) The corolla-tube is generally more than half as long as the ligule, and in most species nearly or quite equals it. It is either completely glabrous or more often bears a ring of long hairs at the summit.

(2) The pappus bristles are relatively weak and few-celled in thickness (4-celled or less in cross-section at the base).

(3) The achene is definitely flattened, and has two strong lateral ribs or wings, with a varying number of lesser ribs on each side. Whether beaked or not, moreover, it possesses a strongly expanded pappus disc.

434/1. **Phyteuma tenerum** R. Schulz, Monographie der Gattung *Phyteuma* (1904). This species has been generally mistaken for *P. orbiculare* L. by most W. European botanists. It would appear that *P. orbiculare* Smith, *Eng. Bot.*, t. 142 (ex Baxt., *Brit. phaner. bot.*, *3*, n. 205); Loddig., *Bot. Cab.*, t. 122 (ex Baxt., *l.c.*); Lamk. & DC., *Fl. Fr.*, ed. 3, *3*, p. 711 (ex parte); Curt., *Fl. Londin.* (new ed.), 4, t. 55; Don, *Gen. hist. dichlam. pl.*, *3*, p. 747 (ex parte); Gren. & Godr., *Fl. Fr.*, *2*, p. 401 (ex parte), to which may be added G. Bonnier, Coste, Rouy (ex parte), also *Handbk. Brit. Fl.*, Bentham & Hooker, 7th ed. by Rendle [1930], p. 284, *Hayward's Bot. p. bk.*, 19th ed. by Druce [1930], p. 120, actually is *P. tenerum* R. Schulz (cf. Schinz & Keller, *Flora der Schweiz*, for distinctive characters).

P. tenerum is a W. European or subatlantic plant. The authentic *P. orbiculare* L. is a mid-european plant (E. France to Belgium and eastward to N.W. Russia and Hungarian mountains). The area of *P. tenerum* covers most French territory, extending to a small part of S.E. England, up to the Thames, of S.E. Germany, and of N.E. Spain.

Of *P. tenerum*, Schulz has made two subspecies, viz., *P. tenerum*, subsp. *anglicum* and *P. tenerum*, subsp. *ibericum*.

The following key (which is a translation in English of the French translation of German) is extracted from *Le Monde des Plantes*, No. 226, 1937: P. Fournier: *Phyteuma tenerum* R. Schulz, sous-espèce *anglicum* R. Schulz en Haute Marne, as has been the above, much condensed information.

Phyteuma tenerum R. Schulz.

Radical leaves most often lanceolate or ovate-lanc., serrulate, acute; stem-leaves decreasing ± regularly or sharply and then only the inferior foliiform, the others bracteiform: stigm. usually 2. ..... ssp. *anglicum*.

Rad. leaves usually elliptic, crenulate, obtuse, the inferior 2 mostly much longer and broader than the others; stem-leaves usually subbractiiform; stigm. usually 3. ..... ssp. *ibericum*.

Ssp. *anglicum* R. Schulz (*P. orbiculare* Benth. & Hook., *Brit. Fl.*, ed. vi, p. 273).

R. Schulz distinguishes the following forms (of *anglicum*):—

A. Slender stem; radical leaves ovate-lanceol. or lanceol., serrulate, acute. ..... var. *tenerrimum* R. Schulz.
   I. Petiole of inferior radical leaves $\leq$ limb. ..... subvar. *brevifolium* R. Schulz.
      1. Rad. l. glabrous or only ciliate on the border. ..... f. *glabrum* R. Schulz.
      2. Rad. l. ± hairy. ..... f. *hirsutum* R. Schulz.
   II. Petiole of inferior rad. leaves $\geq$ limb. ..... subvar. *longifolium* R. Schulz.
      1. Rad. l. glab. or only cil. border. ... f. *glabrescens* R. Schulz.
      2. Rad. l. ± hairy. ..... f. *pilosum* R. Schulz.

B. Slender stem; inferior radical leaves elliptic, obtuse, crenulate. ..... var. *ellipticum* R. Schulz (1).

C. Fistular stem, leaves very near one another, 3 stigm. var. *anomalum* R. Schulz (2).

(1) 2 French localities: Cher: Arçay, Seine and Marne: forêt de Fontainebleau.

(2) 2 do. also Fontainebleau, and Ballon d'Alsace.

(1) Recorded from the Haute-Marne, after Fournier, and parallel to f. *glabrescens* of var. *tenerrimum*.

P. Senay.

435/2. Campanula latifolia L. There is considerable variation in the colour of the flowers and the descriptions of the colours in British text books is inaccurate and conflicting. The normal colour is violet-blue. In some habitats (e.g. in Perthshire and in S. Bavaria) white flowers occur to the exclusion of other colours or preponderate. In some districts of Yorkshire the flowers are relatively small and of a very pale lilac colour.—Pugsley (1937).

460/3. Colour Forms of Primula veris L. With reference to *B.E.C. 1936 Rep.*, 226 (1937), there is a meadow near Salisbury, S. Wilts, in which there were over 50 plants of cowslips with coloured flowers on April 28th, 1937. They have been there at least eight years to my knowledge. The meadow adjoins a cottage garden which has fine plants of "Polyanthus," and there can be no doubt that the colour is derived from them by hybridization. The form of the flowers is always that of the cowslip but most of the plants are very vigorous; the colours range through orange to brown and crimson. In the next meadow all are normal cowslips.—B. Gullick.

478. Centaurium Hill, emend. Adanson. This is the correct generic name according to Gilmour (1937) in a review of the nomenclature of the British species. The enumeration of the species and varieties is as follows, that portion of the species usually regarded as " typical " being given a varietal name : —

1. *C. umbellatum* Gilib.
   a. Var. **Centaurium** (L.) Gilm., " stat. nov." [478/1 of *B.P.L.*, ed. 2.]
   b. Var. **fasciculare** (Duby) Gilm., " comb. nov." *Erythraea Centaurium* (L.) Pers., var. *conferta* Wheld. & Salm. [478/1d.]
   c. Var. **subcapitatum** (Corb.) Gilm., " comb. nov." *E. Centaurium* (L.) Pers., var. *capitata* Koch sec Wheld. & Salm., non Koch. [478/1b.]
   d. Var. *sublitorale* (Wheld. & Salm.) Druce. [478/1e.]
2. *C. capitatum* (Willd. ex Cham.) Britten & Rendle. [478/7.]
3. **C. littorale** (Turner) Gilm., " comb. nov." [478/2.]
   a. Var. *littorale* (Turner) Gilm., " comb. nov." [478/2d.]
   b. Var. *occidentale* (Wheld. & Salm.) Gilm., " comb. nov." [478/2b.]
   c. Var. *Baileyi* (Wheld. & Salm.) Gilm., " comb. nov." [478/2c.]
   d. Var. **minor** (Hartm.) Gilm., " comb. nov." *E. compressa* Hayne, var. *Friesii*, forma *minor* Wheld. & Salm.

   ×*umbellatum* = × *C. intermedium* Druce.
4. *C. pulchellum* (Swartz) Druce. [478/4.]
   a. Var. **palustre** (Gaud.) Druce. [478/4c.] The earliest epithet for the species is *pulchellum*, which was given by Swartz to the dwarf simple form illustrated in Butcher & Strudwick (*Further Illustr. Brit. Pl.*, t. 248, Z) as f. *Schwartziana* With. The earliest varietal name for this form is *E. pulchella*, var. *palustris* Gaud.
   b. Var. **ramosissimum** (Gaud.) Gilm., " comb. nov."
   c. Var. **intermedium** (Mérat) Gilm., " comb. nov."

   ×*umbellatum* = × *C. Wheldonianum* Druce.
5. *C. tenuiflorum* (Hoffmgg. & Link) Fritsch. [478/5.]
6. *C. latifolium* (Smith) Druce. [478/3.]
7. *C. scilloides* (Linn. fil.) Druce. var. *portense* (Brot.) Sampaio (1913), antedating Druce (1917).

497/1b. Symphytum officinale L., var. patens Sibth. A form occurs at Tockenham, N. Wilts (7), in which the corolla and calyx are 6- (and sometimes 7-) partite.—Grose (1937, 88).

543/3. Veronica officinalis L. A very curious form of this species was collected in beechwood, Buckholt Wood, Cranham, East Gloucester, v.-c. 33, on July 4th, 1937. It differed from the typical form of the species in the long prostrate stems up to 35 cms. in length, rooting freely at the lower nodes, in the orbicular leaves with pedicels up to a

centimetre in length, and the small falsely terminal spikes of 6 to 10 flowers. There are no similar specimens in the Herbaria at Kew or South Kensington, though there is a general resemblance to a sheet labelled " f. *submontana* Westerlund, Bot. Not., 1888, 193," in the last named collection. The variation was uniform and plentiful in one part of Buckholt Wood and deserves further study.—J. E. Lousley.

543/9d. Veronica aquatica Benquerel, var. **glandulifera** Čelak. This variety, with the inflorescence more or less glandular, which was referred to in *B.E.C. 1927 Rep.*, 550 (1928), should be added to *Br. Pl. List*.—Ed.

558. Mentha L. *Nomenclature.* A set of Mints was presented by Sole to the Linnean Society in 1797 and has recently been rediscovered among the Society's miscellaneous collections. R. Forster's copy of Sole's book, with the author's marginal notes transcribed at his request, is also in the Society's possession. Sole's own copy with the original notes was to have been presented to the Society but apparently never reached it. The notes show Sole's reaction to Smith's " Observations on the British Mints," which appeared in *Linn. Trans.*, Vol. 5. With several of Sole's sheets now at Kew, they show that he disagreed vigorously with some of Smith's conclusions. A diagram traces the relations between the species and varieties proposed by Linnaeus, Sole, and Smith respectively. Sole was in bad health when the notes were written, which may account for his somewhat peevish tone, but with regard to the points at issue, it may be said that honours were easy.—Savage (1937 B).

558/1c. Mentha rotundifolia (L.) Huds., var. **elongata** Pérard. (=*M. gracilis* Malinv. non Sm. *M. rotundifolia*, var. *psilostachya* Topitz). Among a parcel of Mints submitted to me at Kew, I found an unusual form of *M. rotundifolia* from Manorbier, Pembrokeshire, which I thought might be this variety. Hearing that Mr J. D. Grose was visiting Tenby in September last, I asked him to look the plant up, which he did, sending me material. The variety differs from the forms commonly found in Britain in the long, slender spikes, with separated whorls in the lower half. The main spike may be 10 cm. long, and the lowest 5 or 6 internodes range from 1 cm. to .5 cm., becoming shorter upwards.

Pérard's very short description may be found in the key on p. 337 of *Bull. Soc. Bot. France, 17*, 1870. He gives the name as var. *elongata* Ten., but I have failed to find any reference to it in *Fl. Nap.* Malinvaud's name is invalid, having been used previously by Smith for a form of *M. gentilis*.

Briquet gives a full description under the name of var. *gracilis* Malinv. in *Lat. Alp. Marit.* Rouy in *Fl. Fr., 11*, says " *elongata* Pér.= var. *gracilis* Malinv. in Note ad Menth. Exsicc. No. 3." There is a sheet of this among the set of Malinvaud's Exsiccata in Herb. Mus. Brit., which corresponds quite well with the Manorbier plant.

Topitz also gives a description as var. *psilostachya* in "Menthenflora von Mittel-Europe," *Bot. Centralblatt, 30*, Abt. II, 144 (1913), and cites *M. gracilis* Malinv., noting that the name is invalid.—A. L. Still.

558/6f. ×Mentha piperita L., var. **sylvestris** Sole. The mint known as *Mentha hircina* Hull is not a hybrid of *M. aquatica* × *longifolia* as has been supposed. Hairy forms of the Peppermint have been found in several localities where that species grows but *M. longifolia* is unknown. Still (1937) concludes that such forms are sports of *M. piperita* to which the varietal name *sylvestris* Sole should be applied. See also *B.E.C. 1936 Rep.*, 409 (1937).

588/3b. Plantago Coronopus L., var. laciniata (Willk.) Pilger. Large plant, annual or perennial. Leaves numerous, more or less erect, rather rigid and thick, 10-20 cm. long, rachis linear or linear lanceolate, 4-5 mm. broad, apical segment elongate-lanceolate. Peduncle erect or arcuate-erect, 15-20 cm. long. Bracts setace-acuminate, longer than the calyx. Sepals on the back hairy, ciliate. Kent, W. Sussex.

588/3k. Plantago Coronopus L., var. Columnae (Gouan) Willd. Small plant with perennial root. Leaves somewhat rigid, 2-7(8) cm., rachis linear, apical segment lanceolate, lateral lobes conjugate, hirsute. Peduncle arcuate-ascending, longer than the leaves, 10-13 cm. Spikes generally short, narrow. Bracts about as long as the calyx. Isle of Wight, Cornwall.

Var. Columnae Willd., subvar. **multipartita** Pilger. Often perennial, root thick. Leaves rosulate, 5-13 cm., lateral lobes on each side 5-6, rachis narrow, 2 or occasionally as much as 5 mm. broad. Peduncle ascending, 10-20 cm. Bracts equalling calyx or slightly longer. Sepals on back slightly hirtulous. Isle of Wight, Dorsetshire.

588/3l. Plantago Coronopus L., var. stricta Pilger. Rather small plant with thick perennial root. Leaves rather thick, apical segment and lateral lobes lanceolate, 3-7 cm., slightly pinnati-partite, rachis 3-5(6) mm. broad. Peduncle erect or arcuate, ascending. Spikes 1.5-6 cm. Holy Island and Dublin.

The above three varieties of *P. Coronopus* L. are referred to in *B.E.C. 1931 Rep.*, 665 (1932), specimens from Hb. Druce having been identified by Pilger. Pilger's descriptions may be found in "Plantaginaceae," Engler's *Pflanzenreich, 4*, 269, 102 Heft.—E. G. Baker.

588/8h. Plantago lanceolata L., var. anthoviridis Wats. Experimental cultivation during 1935 and 1936 showed that this variety breeds true. A fuller description than that originally published in *J.B.*, *59*, 355 (1921) is given by Walter Watson (1937).

588/8o. Plantago lanceolata L., var. **mediterranea** Pilger, subvar. **pilosa** Pilger, *l.c.* Leaves erect, longly petioled, reaching 30 × 5 cm.

with long scattered hairs. Peduncles reaching 70 cm. Corolla lobes broadly ovate, 2.25-2.5 mm., with a medium brown striation. Scotland, near Edinburgh.—E. G. Baker.

593/2. Herniaria ciliata Bab. In a revision of the material of the genus in the Berlin Herbarium, Hermann (1937, 213) refers *H. ciliata* to *H. maritima* Link, a Portuguese species, an identification doubted by Pugsley because that species has a woody root-stock, thick wrinkled stems and strongly hairy leaves and calyx. The author saw Cornish material (Vigurs) with a woody root-stock c. 1 cm. diam. at the crown, and stems 2-3 mm. with thick wrinkled cleft bark, and Portuguese specimens from Collares with completely glabrous leaves and sepals. The stouter growth in the South is presumed to be due to climatic influences.

[Comparison of British and Portuguese material in Herb. Mus. Brit. confirms doubts of the identity of *H. ciliata* and *H. maritima*. The British plant is never so hirsute. *H. ciliata* is represented from Santander and possibly both may occur in Portugal. The problem requires field study in Portugal.—A.J.W.]

600/8(2). **Chenopodium reticulatum** Aellen. Allotments near the station, Dorchester, Dorset, v.-c. 9, August 15th, 1937, J. E. Lousley & R. C. L. Burges. This species was described by P. Aellen in *Botaniska Notiser*, 1928, p. 205 seq., as follows: "Planta magna, robusta, plerumque copiose ramosa. Caulis grosse luteo- et viridi-striatus. Folia majora, 6 cm longa, 3.5 cm lata, oblongo-rhomboidea, interdum manifeste triloba, infra medium dente plerumque duplici lobiformi praedita; lobus medius marginibus plerumque parallelis, compluries dentatus, mucronatus. Folii petiolus 2/3 laminae adaequans. Folia superiora angustiora ovali-lanceolata (5 : 1¼ cm), parce dentata vel integra, interdum hastata. Omnia folia levia. Inflorescentia glomeruloso-cymosa vel glomerulosa-spicata. Glomeruli mediocriter magni. Perianthii laciniae fructum includentes, leviter carinatae. Pericarpium valde adhaerescens, subfuscum. Semen magnum, 1-1¾ mm diametro, nigrum, nitidum, in superficie reticulatum, i.e. crate venularum ± regularium quadratarum inductum, area inter venulas ± levi vel tenuiter regulariter granulato-scabra." The Dorchester specimens determined by Dr Aellen bore a very close superficial resemblance to plants of *C. album* L. with which they were associated. The most important character distinguishing this species from *C. album* would therefore appear to be the very characteristic reticulation of the surface of the seed—visible only under the microscope.—J. E. Lousley.

606/8. Atriplex laciniata L. (*A. sabulosa* Rouy). A long discussion of the forms of, or related to, this species is given by Moser (1937), but is difficult to follow because of his confused nomenclature. Apparently he would include *A. Tornabeni* Tineo (p. 283) [in which case that name would take precedence of Rouy's], but in the plates it is referred to (p. 285) as *A. tataricum*, var. *Tornabeni* (Tin.) Gürke.

[By the type method *A. laciniata* L. is to be typified by the specimen in Herb. Clifford, the change of "annuo" to "herbaceo" being a mere orthographic improvement made consistently by Linnaeus in the definitions of *Atriplex* in the "Species Plantarum." The type specimen is *A. sabulosa* Rouy, a solution which short-circuits the series of illegitimate epithets antedating Rouy's *sabulosa*. The "obtuse-dentatis" of the definition clearly indicates *A. sabulosa* and not *A. tatarica* L. (the type of which is in Herb. Linn.) and destroys the implication of the epithet "laciniata," taken from the Bauhin synonym which is "*A. tatarica*" and not *A. sabulosa*. The sheet in Herb. Linn. marked "5. *laciniata*" (without indication of origin) appears to be *A. Tornabeni* Tin.—A.J.W.]

633. Ulmus L. According to Bancroft (1937) it is impossible to classify the British Elms into "species" in the conventional sense, owing to the present plasticity of the genus, which is in an active state of evolution by hybridisation and variation. A "working classification" is proposed, which includes four "Standard Types" and four Elms "other than those conforming to 'Standard Types.'"

The four "Standard Types" are: *U. nitens* Moench; *U. montana* Stokes; *U. procera* Salisb. ("*U. campestris*" auct., non L.); *U. minor* Mill.

Of the four Elms which do not conform to the "Standard Types," ×*U. vegeta* (Loudon) Schneider is considered to be truly intermediate between and an F_1 hybrid of *U. montana* and *U. nitens*. ×*U. hollandica* (Mill.) Moss also combines the characters of the same two species but approaches more closely to *U. nitens*. The two other forms, (? ×) *U. stricta* Lindl. and (? ×) *U. sarniensis* (Moss) "sp. nov.," appear to be of hybrid origin, combining in varying degrees the characters of *U. minor* and *U. nitens*.

This paper includes a key as well as an account of the general characteristics, distributional range and synonymy of the eight forms described.

650/10. Salix atrocinerea Brot. It is surprising to read in the late J. Fraser's paper, "Revised Nomenclature of *Salix*," in *B.E.C. 1932 Rep.*, 369 (1933) that this species is "rare and little known in France." This is probably due to the fact that Fraser worked on older French floras, and that few French botanists work at Willows. An enlightening note by Ph. Guinier: Un Saule peu connu de la flore de France (*Salix atrocinerea* Brot.) in *Bull. Soc. Bot. Fr.*, *58*, session extraordinaire 1, 1911, should not be overlooked by any salicologist, even by a non-specialist. The geographical distribution of *S. atrocinerea* covers at least the Western two-thirds of France (including Normandy, and extending as far as the rivers Yonne and Allier). Its western limit wants to be defined.

S. atrocinerea has an Atlantic distribution, while that of *S. cinerea* L. is Continental. Rouy makes *atrocinerea* a race of *cinerea*, while

the leading French salicologist, Dr M. Chassagne, who worked at the Willows with the late Dr Goerz in Germany, considers it to be a speeies.

Although reported to occur in Britain, I understand that *S. cinerea* L. is not aceepted by British botanists as a British speeies. It appears to be desirable to eheck the presenee of *S. atrocinerea* Brot. throughout Britain in order to make quite sure of the absenee of the former.—P. Senay.

Dr Floderus told me, when he revised the British Willows in the Museum, that the geographical range of *S. atrocinerea* was " Atlantic," i.e. most of France and in the Iberian Peninsula, whereas that of *S. cinerea* was more Scandinavian and Central European, not at all " Atlantic." The third species of the group is *S. pedicellata* Desf., a " Mediterranean " species. All our large series of British material is *S. atrocinerea*, and the oeeurrenee of *S. cinerea* in the British Isles or Western France would be contrary to the known distributions of the species, I believe.—A. J. W.

650/10×6. **Salix atrocinerea** Brot. × **viminalis** L. A speeimen in Herb. Kew from 6, N. Somerset, Walton-in-Gordano, 1899, J. W. White (as *S. rugosa* Leefe, see *Flora of Bristol*, 537, 1912) has been determined by Dr B. Floderus as this hybrid.—Sandwith (1937, 179).

666/. Epipogium R. Br. The name has been spelt *Epipogium*, *Epipogum*, *Epipogon* and *Epipogion*. Under the International Rules, *Epipogium* is the correct spelling.—Sprague and Green (1937).

669/9. Orchis purpurella T. & T. A. Stephenson. The speeimens recorded by me below (see pp. 506-507) under this name show a considerable variety of labellum, from nearly " diamond-shaped " to broad like that of *O. praetermissa* Druce. The type of deeper marking is, however, quite different from that of *O. praetermissa*, and is sufficiently uniform to justify placing all together under *O. purpurella*. Generally the foliage is unspotted, but plants with small spots occur whieh are quite different from those of the hybrid with *O. elodes* Griseb., which are obvious and frequent when the two species grow together. I find it impossible at present to draw any line between the extreme var. *pulchella* (Druce) Pugsl.—often uniform where it oecurs—and typieal *O. purpurella*. Moreover, other peculiar forms are met with, not referable to either.

The fine flowered plants with heavily spotted leaves from the north coast of Scotland may, I now think, prove to be **O. occidentalis** (Pugsl.) Wilmott, " comb. nov." (see p. 551 below), but I think I have eliminated any which may be that species from those I have now recorded as *O. purpurella*.—A. J. Wilmott.

718/13. Juncus squarrosus L. A eurious abnormal eondition occurs in which the whole plant is stunted with the flowers congested in small compact inflorescences, the bracts and perianth-segments being

whitish or whitish-hyaline with a brown tinge, and the fruit small and green, rounded and blunter than that of the typical form, with abortive seeds. No evidence has been discovered of attack either by fungus or insect. Specimens have been seen from the following localities: Moor N. of Rough Hill, Surrey, v.-c. 17, 1925, C. E. Salmon (Herb. Kew). Coniston, Westmorland, v.-c. 69, 1902, Rev. W. Wright Mason (Herb. Druce). Melmerby, Cumberland, v.-c. 70, 1923, Rev. W. Wright Mason (Herb. Druce). Moorland near Foss, on S. side of Loch Tummel, Mid-Perth, v.-c. 88, July 1936, in quantity, C. I. and N. Y. Sandwith. Sands of Barry, Angus, v.-c. 90, July 1936, C. I. and N. Y. Sandwith.—N. Y. Sandwith.

753/49m. Carex Goodenowii Gay, var. **hebridensis** (Ar. Benn.) Wilmott. See p. 555.

753/77. Carex vulpinoidea Michaux, *Fl. bor.-amer.*, *2*, 169, 1803. (*C. vulpinoides* auct. angl.). Native of North America and Columbia, naturalised in Europe and Australasia. Six large clumps in an old pit near Farnborough, W. Kent, v.-c. 16, July 14th 1937.

This species was first found in Britain by G. Nicholson who collected it from the "Banks of the Thames at Kew, Surrey," in 1880 (Herb. Kew). Although apparently it did not persist in this locality, it was included in subsequent editions of Babington's *Manual* and the *London Catalogue*, and hence in Druce's *Plant List*. The only later gatherings of this plant in Britain so far as I am aware are:—(1) A sheet in Herb. Mus. Brit. labelled "Probably from Acton (dust heap)? Coll. A. Loydell, 19/9/1907, Herb. J. E. Cooper;" (2) Avonmouth Docks, 1932, Gibbons (C. I. Sandwith, "The Adventive Flora of the Port of Bristol," *B.E.C. 1932 Rep.*, 359 (1933)).

At Farnborough the species was very well established and several of the clumps may have been the result of several years' growth. The banks of the old chalk-pit in which it grew still produced a natural chalk flora including *Verbascum Lychnitis*, var. *album*, but in 1937 the end of the pit away from the *Carex* had been partially filled in with refuse and produced many alien plants. The end at which *Carex vulpinoidea* occurred had not recently been interfered with, and the most probable source of introduction of both this sedge and *C. Crawfordii* (see p. 515) was a series of timber "sleepers" laid down to form a cart road.

C. vulpinoidea is a species which shows a tendency to ready colonisation, and it is likely that it may one day succeed in establishing itself in a British habitat. In France it was observed at Bruailles near Louhans (Saone et Loire) in 1857, when it was described as a new species—*C. Moniezii* Lagrange (*Bull. Soc. Bot. France*, *4*, 163, 1857). At this station it persisted. More recently it has been noted in the Department of Tarn-et-Garonne. In Germany it has been found in Holstein and Pomerania, and elsewhere in Europe in the Caucasus and near Szepes in Hungary.—J. E. Lousley.

737/23. Potamogeton pusillus L. Examination of the type-specimen of this species in Herb. Linn. by Dandy and Taylor (1938) reveals that Linnaeus' name should be given to that species for which the name *P. panormitanus* Biv.-Bern. has been in use. The earliest valid name for " *P. pusillus* " auct. non L. appears to be *P. Berchtoldii* Fieb. The *British Plant List*, ed. 2, should therefore be amended to read as follows:—737/23. **P. Berchtoldii** Fieb. (*P. pusillus* auct. non L.). 737/25. **P. pusillus** L. (*P. panormitanus* Biv.-Bern.), and these names are used in this sense below.

780. Agrostis L. The British species of this genus have been revised by Philipson (1937). In addition to a complete synonymy fully-detailed descriptions are given of the native species and shorter descriptions of the alien species occurring in Britain. There are two keys: one for the native species and their varieties, the other to include alien species as well as native. Other matters fully discussed include the anatomy, life-history, intra-specific variation, and distribution of the species. The taxonomic divisions used for expressing the conclusions reached as to variation within the species are varieties, ecads and minor variations. The author's conception of " varieties " is that they represent two or more sub-divisions of the species, equal in rank, the subdivision which is considered typical of the species being treated as a variety also. In addition a number of diseased states are referred to, some of which have in the past been treated taxonomically as varieties or even species (see Philipson (1935 A)—abstract in *B.E.C. 1935 Rep.*, 150 (1936)). A large number of the varietal names in the *British Plant List*, ed. 2, are referred to the " minor variations," which are not given names in the following arrangement which is that of the revision. The numbers in square brackets are those of *Br. Pl. List*, ed. 2.

A. *British Species and Varieties.*

Section I. Trichodium (Michx.) Trin. Species with the palea less than $\frac{1}{4}$ the length of the lemma.

1. *A. setacea* Curtis, *General Obs.*, 4 (1787). [780/4.]
2. *A. canina* L., *Sp. Pl.*, ed. 1, *1*, 62 (1753). [780/6.]
   Varieties. a. *fasciculatis* (Curtis) Sinclair, *Hort. Gram. Wob.*, 278 (1824). [780/6, vars. i and k.]
   b. **arida** Schlechtendal, *Fl. Berol.*, *1*, 45 (1823). Six minor variations.

Section II. *Vilfa* (Adans.) Roem. & Schult. Species with the palea more than 1/3 the length of the lemma.

3. **A. tenuis** Sibthorp, *Fl. Oxon*, 36 (1794). [780/3.]
   Varieties. a. **hispida** (Willd.) Philipson, " comb. nov." [780/3.] Four minor variations.
   b. *humilis* (Aschers. & Graebn.) Druce, *Br. Pl. List.*, ed. 1, 79 (1908). [780/3, var. d.]

4. **A. gigantea** Roth, *Fl. Germ.*, *1*, 31 (1788). [780/2, var. c.]
   Varieties. a. **ramosa** (S. F. Gray) Philipson, "comb. nov." [780/2, vars. c and h.]
   b. **dispar** (Michx.) Philipson, "comb. nov." [780/3, var. f. *A. nigra* With.]
5. **A. stolonifera** L., *Sp. Pl.*, ed. 1, *1*, 62 (1753). [780/2, var. f.]
   Varieties. a. **stolonifera** (L.) Koch, *Fl. Germ. et Helv.*, ed. 1, 781 (1837).
   Ecas. 1. **stolonifera** (L.) Philipson, "comb nov." [780/2, var. i.]
   2. **salina** (Jansen & Wachter) Philipson, "comb. nov."
   3. **arenaria** (Jansen & Wachter) Philipson, "comb. nov." [780/2, var. g.]
   4. **calcicola** Philipson, "ecas. nov."
   Two minor variations.
   b. **palustris** Huds., *Fl. Angl.*, ed. 1, 27 (1762). [780/2.]
   One minor variation.

B. *Hybrids.*

1. **A. canina** L. × **tenuis** Sibth. Recorded from v.-cc. 12, 92, 110, H.5.
2. **A. canina** L. × **stolonifera** L. Recorded from "Cornwall, Truro," v.-c. 1 or 2.
3. **A. stolonifera** L. × **Polypogon monspeliensis** Desf. [782/2.]

C. *Aliens.*

1. **A. Muelleri** Presl, *Bot. Bemerk.*, 120 (1844) (*A. pallida* Lam. & DC.). Native of S. Europe. V.-c. 83. [780/7.]
2. **A. hiemalis** (Walt.) Britton, Sterns & Poggenb., *Prelim. Catal.*, 68 (1888). Native of N. America. V.-cc. 21, 34, 97.
3. **A. olivetorum** Gren. & Godr., *Fl. Fr.*, *3*, 483 (1856). Native of S. Europe. V.-cc. 11, 34, 41. [This species may be a hybrid between *A. canina* and *A. tenuis*.]
4. **A. semiverticillata** (Forssk.) Christens. in *Dansk. Bot. Arehiv*, *4*, 12 (1922). [780/1: as to this name see Hubbard in *B.E.C. 1936 Rep.*, 415 (1937).—Ed.]
5. *A. nebulosa* Boiss. & Reut., *Diagn.*, 26 (1842). Native of S. Spain. V.-cc. 23, 83. [780/5.]
6. *A. lachnantha* Nees in *Ind. Sem. Hort. Bot. Vratisl.* (1834). Native of S. Africa. V.-c. 79. [780/10.]
7. **A. avenacea** J. F. Gmel., *Syst.*, *2*, 171 (1791). (*A. retrofracta* Willd.: *Deyeuxia Fosteri* Kunth). Native of Australia and New Zealand. V.-c. 79. [783/6.]

Philipson has seen no British specimens of *A. elegans* Thore [780/8] and *A. eriantha* Hack. [780/11].

824/11b. Poa alpina L., var. acutifolia Druce. This is referred by Nannfeldt (1937 A) to *P. jemtlandica* (Almqu.) Richt., and has been taken to be a hybrid between *P. alpina* L. and *P. flexuosa* Sm. (which is "*Poa laxa*, var. *scotica*" Druce). In Scandinavia its distribution (map, p. 7) is exclusively within that of *P. flexuosa*, but is very small although in Sweden, as on Lochnagar, the number of individuals exceeds those of *P. flexuosa*. A discussion of the relation of vivipary to hybridization is added and the details of distribution are added in full (including Scotland, p. 25).

PLANT RECORDS.

*=New vice-county record. †=Not native in this locality.

Note.—Where these signs are used at the beginning of a paragraph containing more than one record, they refer to the first record only.

In the case of direct contributions, the name of the contributor is printed in small capitals. In the case of records which are Abstracts, the author's name and date, or the date alone, are enclosed in brackets. In every case where no date is printed, it is to be understood that the record refers to 1937.

See also pp. 428-435 for records made on the 1937 Excursions.

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†1/2. Clematis Flammula L. 6, N. Somerset; rocky ground in Bourton Combe, 1936, I. Evans (Sandwith; 1937, 180).

4/1. Adonis annua L. emend. Mill. 8, S. Wilts.; in a cabbage field on Ashley Hill, two miles east of Salisbury, Gullick (1937; 82). 20, Herts.; Great Amwell, D. McClintock.

5/1. Myosurus minimus L. 12, N. Hants.; between Fleet and Crookham, G. A. R. Watts.

6/5d. Ranunculus bulbosus L., var. dunensis Druce. 3, S. Devon; Dawlish Warren, 1936, G. T. Fraser, det. A. J. Wilmott.

6/20. Ranunculus fluitans Lam. 3, S. Devon; R. Otter, Otterton, G. T. Fraser.

6/22. Ranunculus trichophyllus Chaix. 37, Worcs.; Castlemorton Common, F. M. Day, det. R. W. Butcher. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

*6/22(2). Ranunculus radians Revel. 7, N. Wilts.; pond at Flaxlands, near Wootton Bassett, J. D. Grose, det. R. W. Butcher.

6/24. Ranunculus heterophyllus Weber. 3, S. Devon; ditch, Otterton Bridge, G. T. Fraser.

6/26b. Ranunculus pseudo-fluitans Baker & Foggitt, var. minor Pearsall. 57, Derby; R. Wye, Monsal Dale, Miss E. S. Todd.

6/28b. Ranunculus Baudotii Godron, var. confusus (Godron). 45, Pembroke; Lillypool, Bosherton, J. F. G. Chapple, det. R. W. Butcher.

*6/29. Ranunculus tripartitus DC. 14, E. Sussex (W. Dod; 1937, 8).

6/31. Ranunculus Lenormandi F. Schultz. 12, N. Hants.; ditch by Weaver's Down, near Liphook, E. C. Wallace. 16, W. Kent; Hayes, D. McClintock, det. Kew.

6/33e. Ranunculus Ficaria L., var. bulbifera Marsden-Jones. 38, Warwick; shady church-yard, Stratford-on-Avon, P. M. Hall.

†6(2). **Ceratocephalus** Moench, *Meth.*, 218 (1794).

†6(2)/1. **Ceratocephalus falcatus** (L.) Pers., *Syn.*, *1*, 341 (1805). *Ranunculus falcatus* L., *Sp. Pl.*, ed. 1, 556 (1753) = 6/19 of *B.P.L.* Mediterranean Region. 6, N. Somerset; Bristol tip, J. P. M. Brenan and Mrs C. I. Sandwith.

9/1b. Helleborus viridis L., var. occidentalis (Reut.) Druce. 40, Salop; Bowhills Dingle, nearly a hundred plants, far from a habitation and appearing to be native: bracketed in *C.F.*, meaning, presumably, that it is not native, W. H. Hardaker.

†9/2. Helleborus foetidus L. 3, S. Devon; recently introduced at Watcombe, Torquay, by Miss E. F. Foster: it grew about Torquay many years ago but has not been seen for a long time.—G. T. Fraser.

*†13/3. Delphinium Gayanum Wilmott (*D. Ajacis* Gay, non L.). 14, E. Sussex (W.-Dod; 1937, 17).

*14/1. Aconitum anglicum Stapf. 13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 17). 36, Hereford; still at Gosford Bridge, Little Hereford, where it has been known since 1819, J. E. Lousley and A. H. Carter.

17/1. Berberis vulgaris L. 8, S. Wilts.; hedge near Standlynch, Gullick (1937; 82).

*†22/1. Meconopsis cambrica (L.) Vig. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 21).

†23/3. **Glaucium grandiflorum** Boiss. & Huet., in Boiss., *Diagn.*, Ser. 2, *5*, 15 (1856). E. Mediterranean Region. 6, N. Somerset; waste land above Oldfield Park, Bath, 1936, I. Evans (Sandwith; 1937, 180).

*32/1. Fumaria capreolata L. 13, W. Sussex (W.-Dod; 1937, 23).

32/5. Fumaria Boraei Jord. 52, Anglesey; Trearddur Bay, A. L. Still. [Given for 52 in *C.F.*, though bracketed as doubtful in *Welsh Flowering Plants*.—Ed.]

32/5c. Fumaria Boraei Jord., var. gracilis Pugsl. 11, S. Hants.; near Eling, Lady Davy and J. F. G. Chapple, det. H. W. Pugsley.

32/9b. Fumaria Bastardii Boreau, var. hibernica Pugsl. H.12, Wexford; Rosslare village, J. E. Lousley and R. C. L. Burges, det. H. W. Pugsley.

33/2. Matthiola sinuata Br. Bracket 14, E. Sussex in *C.F.*: the record on which this is based is considered by W.-Dod (1937; 25) to have been a clerical error for *M. incana*.—Ed.

*35/2. Rorippa sylvestris (L.) Sm. 52, Anglesey; Trearddur Bay (B.E.C. Exc.).

†35/5. Rorippa austriaca (Crantz) Bess. 22, Berks., established for some years in a paddock at Winterbrook Lodge, Cholsey, Lady Severn, det. Miss M. S. Campbell as *Nasturtium austriacum* Crantz.

*†36/5. Barbarea intermedia Boreau. 13, W. Sussex (W.-Dod; 1937, 29).

37/6. Arabis glabra (L.) Bernh. 7, N. Wilts.; still exists in two places near Spye Park, Grose (1937; 87). Delete 14, E. Sussex, from *C.F.* (W.-Dod; 1937, 30).

†40/2. Lunaria annua L. 4, N. Devon; escape, E. Lyn valley, C. Amherst.

43/3b. Draba incana L., var. confusa (Ehrh.) Liljebl. 88, Mid Perth, rocks in the Invervar corrie, Glen Lyon, R. Mackechnie and E. C. Wallace.

*†43/4. Draba muralis L. 8, S. Wilts.; appeared in 1937 in a garden at West Grimstead, near Salisbury, close to a *Spiraea* brought from Hillier's nursery, Winchester, two or three years before: cf. *B.E.C. 1936 Rep.*, 239 (1937); Gullick (1937; 82). *†12, N. Hants.; shrubbery, Longstock Park, Stockbridge, Miss Beddington.

*44/3. Erophila praecox DC. 13, W. Sussex (W.-Dod; 1937, 35).

45/5. Cochlearia anglica L. Add 14, E. Sussex to *C.F.*, but no record since 1798 (W.-Dod; 1937, 36). 74, Wigtown; muddy ditches by Moss of Cree, E. C. Wallace.

*45/7. Cochlearia danica L. 14, E. Sussex (W.-Dod; 1937, 36).

†49/4. Sisymbrium orientale L. 3, S. Devon; Newton Abbot tip, G. T. Fraser.

†49 26. **Sisymbrium septulatum** DC., *Syst. Nat.*, *2*, 471 (1821): *Prodr.*, *1*, 193 (1824). *Sinapis Oliveriana* DC., *ll. cc.*, 609 and 218. *Sisymbrium grandiflorum* Post, *Pl. Post.*, *1*, 3 (1890). Syria, Persia, Arabia, Afghanistan, Baluchistan. 6. N. Somerset; Bristol tip, Mrs C. I. Sandwith and J. P. M. Brenan.

†52/1. Camelina sativa Crantz. 13, W. Sussex (W.-Dod; 1937, 40); add to *C.F.*, previous record in *J.B.*, 19 (1909).—Ed.

53/1. Subularia aquatica L. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

54/1. Brassica oleracea L. 14, E. Sussex (W.-Dod; 1937, 41); add to *C.F.*, recorded by L'Obel in 1655.—Ed.

54/14b. Brassica arvensis Kuntze, var. orientalis (L.) Aschers. 33, E. Gloster; Windrush, F. M. Day.

†54/16. Brassica juncea Coss. 6, N. Somerset; Weston, Bath, T. H. Green.

†54/20. Brassica gallica (Willd.) Druce. 14, E. Sussex; Newhaven, one plant only, L. A. W. Burder. *†61, S.E. Yorks.; King George Dock, Hull, A. K. Wilson, Miss C. M. Rob and W. A. Sledge.

†54/22. Brassica adpressa Boiss. 6, N. Somerset; Weston, Bath, T. H. Green.

55/1. Diplotaxis tenuifolia (L.) DC. Delete brackets from 14, E. Sussex, in *C.F.* (W.-Dod; 1937, 42-43). 61, S.E. Yorks.; Skidby chalk-pit, A. K. Wilson.

*61/2. Lepidium latifolium L. 14, E. Sussex (W.-Dod; 1937, 45). †20, Herts.; canal bank near Rickmansworth, P. H. Cooke and F. M. Day (recorded independently).

†61/3. Lepidium Draba L. Add 14, E. Sussex, to *C.F.* (W.-Dod; 1937, 47): see *J.B.*, 11 (1906), for previous record.—Ed.

*†61/4. Lepidium ruderale L. 56, Notts; canal-side, Lenton, R. Bulley in *B.E.C. 1936 Rep.*, 394, 1937. †61, S.E. Yorks.; Olympia Sidings, J. Kendall.

61/5. Lepidium campestre (L.) R. Br. 33, E. Gloster; Foxcote, Miss L. Abell.

†61/12. Lepidium sativum L. 46, Cardigan; near Tresaith, W. R. Roberts, comm. Dept. Bot., Nat. Mus. Wales.

†61/28. Lepidium bonariense L. 11, S. Hants.; Wicor, near Portchester, 1934, W. A. Sledge, det. P. Aellen.

*†65/1. Iberis amara L. 13, W. Sussex (W.-Dod; 1937, 48).

67/1. Hutchinsia petraea (L.) R. Br. 6, N. Somerset; near Charterhouse-on-Mendip, 1935, W. S. Parry: perhaps confirming the old record (J. C. Collins in *New Bot. Guide*, 1837) from Cheddar given in the *Bristol Flora*.—Sandwith (1937, 176).

†68/1. Isatis tinctoria L. Add 13, W. Sussex, to *C.F.* (W.-Dod; 1937, 48), but see *J.B.*, 19 (1909), for previous record.—Ed. *†14, E. Sussex (W.-Dod; *loc. cit.*).

†70/2. Vogelia apiculata (Fisch., Mey. & Avé-Lall.) Vierh. 6, N. Somerset; waste ground, Bristol, Mrs C. I. Sandwith.

80/2. Raphanus maritimus Sm. 41, Glamorgan; on pebble beach, Aberthaw, confirming record made by J. Storrie in 1886, Miss E. Vachell, det. A. J. Wilmott.

†85/6. Reseda inodora Reichb. 6, N. Somerset; waste land above Oldfield Park, Bath, 1936, I. Evans (Sandwith; 1937, 180).

88. Viola L., determined by P. M. Hall.

88/4e. Viola Riviniana Reichb., var. nemorosa Neum., Waldst., and Murb. 28, W. Norfolk; Beeston, near Litcham, E. S. Edees.

88/6. Viola canina L. 108, W. Sutherland; Island of Handa, sparingly on dunes (spec. non vidi.—P.M.H.), J. W. and H. Heslop Harrison (1937; 2). [Stated in error to be N.C.R., but see *J.B.*, 169 (1916), for previous record: add to *C.F.*—Ed.]

88/6h. Viola canina L., var. lucorum Reichb. H.2, N. Kerry; Ross Island, Killarney, J. E. Lousley and R. C. L. Burges. H.15, S.E. Galway; Garryland demesne, Gort, 1936: H.27, W. Mayo; wooded shore, S.E. corner of Lough Conn, 1936; P. M. Hall and N. D. Simpson.

*88/7. Viola lactea Sm. 13, W. Sussex (W.-Dod; 1937, 57). 41, Glamorgan; Ewenny Down, near Bridgend, Miss Rawlins.

88/7×5. Viola lactea Sm. × Riviniana Reichb. 41, Glamorgan; Ewenny Down, near Bridgend, Miss Rawlins.

88/8h. Viola odorata L., var. subcarnea (Jord.) Parl. 23, Oxon.; wood near Cold Harbour, H. J. Riddelsdell. 36, Hereford; Halesend, Cradley, F. M. Day.

88/15b. Viola variata Jord., var. sulphurea Drabble. 24, Bucks.; Cop Hill, F. Carter and J. D. Grose.

*88/24. Viola segetalis Jord., f. obtusifolia (Jord.). 54, N. Lincs.; Winterton, E. S. Edees in *B.E.C. 1936 Rep.*, 394, 1937.

88/26. Viola anglica Drabble. 19, N. Essex; north of Great Chesterford: 26, W. Suffolk; clover field near Barton Mills, P. M. Hall and E. C. Wallace.

*88/29. Viola arvatica Jord. 76, Renfrew; between Wemyss Bay and Gourock, Hon. W. J. L. Palmer.

88/33. Viola lutea Huds. H.20, Wicklow; sand-dunes, Brittas Bay, J. E. Lousley and R. C. L. Burges.

88/34. Viola lutea Huds., f. Curtisii (Forster) Drabble. 45, Pembroke; dunes, Freshwater Bay West, J. F. G. Chapple.

89/4. Polygala oxyptera Reichb. 12, N. Hants.; turf of Nore Hill, Selborne, A. J. Wilmott and P. M. Hall.

†92/7. Dianthus plumarius L. 14, E. Sussex; downs near Firle Beacon, W. E. Warren.

†93/1. Dianthus prolifer L. Add to *C.F.* 14, E. Sussex, alien (W.-Dod; 1937, 64): see *J.B.*, 12 (1906), for previous record.—Ed.

96/2b. Silene Cucubalus Wibel, var. pubescens DC. 3, S. Devon; Milber: Brixham; T. Stephenson. 85, Fife; N. Queensferry, E. C. Wallace.

*†96/4. Silene nootiflora L. 13, W. Sussex (W.-Dod; 1937, 67). †33, E. Gloster; Foxcote, Miss L. Abell.

96/5. Silene anglica L. 45, Pembroke; cultivated fields, Angle, J. F. G. Chapple. 46, Cardigan; Gwbert-on-Sea, W. R. Roberts, comm. Dept. Bot., Nat. Mus. Wales. [Add to *C.F.*: see *Welsh Flowering Plants* for previous record.—Ed.]

*†96/6. Silene quinquevulnera L. 13, W. Sussex, and *†14, E. Sussex (W.-Dod; 1937, 66).

†96/7. Silene gallica L. 16, W. Kent; Hayes, D. McClintock.

96/10. Silene nutans L. 3, S. Devon; Beer, Sir M. Abbot Anderson and G. T. Fraser.

*†96/11. Silene italica Pers. 13, W. Sussex, as an escape: delete 14, E. Sussex, from *C.F.*, error (W.-Dod; 1937, 67).

†96/27(2). **Silene coeli-rosa** (L.) Godr., *Obs. crit. l'infl. Silene*, 42 (1847). *Agrostemma coeli-rosa* L., *Sp. Pl.*, ed. 1, 436 (1753). W. Mediterranean Region and cult. 41, Glamorgan; Splott, Cardiff, R. L. Smith.

100/1. Moenchia erecta (L.) G. M. & S. 8, S. Wilts.; Landford Common, Gullick (1937; 82). 43, Radnor; Llan-fillan, J. F. G. Chapple and N. D. Simpson. 49, Caernarvon; near Llanfairfechan, F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

100/2. Cerastium arvense L. 7, N. Wilts.; Okus, Swindon, Grose (1937; 87).

101/4. Stellaria neglecta Weihe. 8, S. Wilts.; Gutch Common, Semley, 1936: near Tisbury Station: lane from Ham Cross to Chilmark quarries; Gullick (1937; 82). [Add to *C.F.*: for previous record see *Top. Bot. Supp.*, i, 21 (1905).—Ed.] *52, Anglesey; near Red Wharf Bay, Miss E. Vachell.

101/6. Stellaria palustris Retz., var. viridis Fries. Read "13, W. Sussex" for "14, E. Sussex" in *C.F.* (W.-Dod; 1937, 75).

102/8. Arenaria tenuifolia L. 6, N. Somerset; in open limestone vegetation near the top of Purn Hill, Bleadon, J. E. Lousley. 7, N. Wilts.; Oaksey, P. M. Hall and J. D. Grose. 8, S. Wilts.; Salisbury, walls in Mill Road and Harcourt Terrace, Gullick (1937; 82).

†102/14. Arenaria balearica L. 3, S. Devon; wall-top, Vane Hill, Torquay, E. M. Phillips.

103/1c. Sagina nodosa (L.) Fenzl, var. moniliformis Lange. 8, S. Wilts.; Allington Down, J. D. Grose, det. F. R. Elliston Wright.

103/2. Sagina subulata (Sw.) Presl. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 79): see *J.B.*, 12 (1906), for previous record.—Ed. 49, Caernarvon; Llanfairfechan, F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

103/5. Sagina scotica Druce. 88, Mid Perth; Ben Heasgarnich, P. M. Hall and W. A. Sledge.

105/1. Spergularia rupicola Lebel. 45, Pembroke; Broadhaven Bay, J. F. G. Chapple.

105/5. Spergularia rubra (L.) Pers. 89, E. Perth; Ballinluig, R. Mackechnie and E. C. Wallace.

*†108/1. Claytonia alsinoides Sims. 4, N. Devon; Old Rectory, Belstone, E. M. Phillips.

109/2. Montia verna Neck. 43, Radnor; Llan-fillan, J. F. G. Chapple and N. D. Simpson.

*111/2. Elatine hexandra DC. 70, Cumberland; Thurstonfield Loch (soft-neutral water), R. W. Butcher.

†112/3. Hypericum hircinum L. 13, W. Sussex; banks of the Arun north of Billingshurst, far from habitation, E. C. Wallace.

112/7. Hypericum montanum L. 45, Pembroke; near Broadhaven, J. F. G. Chapple. [Not the same form that grows on the Chilterns, which is the var. *scabrum* Koch.—J.F.G.C.]

112/12. Hypericum maculatum Crantz. 12, N. Hants.; several places about Hartley Wintney, E. C. Wallace.

112/17. Hypericum elodes L. 44, Carmarthen; drainage cut in a boggy field, Sylen, D. Evans, comm. Dept. Bot., Nat. Mus. Wales.

†115/2. Althaea hirsuta L. 6, N. Somerset; waste land above Oldfield Park, Bath, 1936, I. Evans (Sandwith; 1937, 180). †41, Glamorgan; Splott, Miss Rawlins and Miss Todd.

116/1. Lavatera arborea L. 45, Pembroke; Broadhaven Bay: Bullslaughter Bay; J. F. G. Chapple. †H.28, Sligo; Rosses Point, W. H. Hardaker. [Praeger, 1934, states that this species is not native in Co. Sligo, but does not give it as one of the plants of this locality.—Ed.]

†117/9. Malva parviflora L. 16, W. Kent; old chalkpit, Greenstreet Green, near Farnborough, J. E. Lousley.

*†123/1. Tilia platyphyllos Scop. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 90-1).

*123/3. Tilia cordata Mill. 13, W. Sussex (W.-Dod; 1937, 91).

*124/1. Radiola linoides Roth. 97, W. Inverness; Invercannich, 1936, Miss M. S. Campbell. 105, W. Ross; Opinan, near Gairloch, 1936, F. Druce with Miss M. S. Campbell and A. J. Wilmott.

†126/1. Tribulus terrestris L. 39, Staffs.; Burton-on-Trent, J. P. M. Brenan and J. Chapple.

*†127/1. Geranium sanguineum L. 13, W. Sussex (W.-Dod; 1937, 93). Add 14, E. Sussex to *C.F.* (W.-Dod; *loc. cit.*) but see *J.B.*, 13 (1906), for earlier record.—Ed.

†127/2. Geranium versicolor L. 3, S. Devon; Longbrook, near Ermington: near Hole's Hole, Bere Alston, E. M. Phillips.

127/4. Geranium pratense L. 12, N. Hants.; S. Warnborough, P. M. Hall, H. W. Pugsley, E. C. Wallace and A. J. Wilmott. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 94): see *J.B.*, 13 (1906), for earlier record.—Ed.

†127/5. Geranium phaeum L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 94): see *J.B.*, 13 (1906), for earlier record. *†14, E. Sussex (W.-Dod; *loc. cit.*).

*†127/11. Geranium rotundifolium L. 14, E. Sussex (W.-Dod; 1937, 96).

127/12. Geranium pusillum L. 12, N. Hants.; Hazeley Heath, G. A. R. Watts.

128/1. Erodium maritimum (L.) L'Hérit. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 99): see *J.B.*, 13 (1906), for earlier record. Delete brackets from 14, E. Sussex in *C.F.*: although the species is very rare, perhaps extinct, at the present time, there are herbarium specimens from one locality (W.-Dod; *loc. cit.*).

†128/2. Erodium moschatum (L.) L'Hérit. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 99): see *J.B.*, 13 (1906), for earlier record.—Ed.

*†132/2. Oxalis corniculata L. 13, W. Sussex (W.-Dod; 1937, 100).

*†132/3. Oxalis stricta L. 16, W. Kent; Hayes, D. McClintock.

†132/6. Oxalis violacea L. H.1, S. Kerry; Darrynane: H.20, Wicklow; Brittas Bay; in both cases on dunes well away from houses, J. E. Lousley and R. C. L. Burges.

*†133/1. Impatiens Noli-tangere L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 100). †69, N. Lancs.; eastern shore of Coniston Water, many large dense clumps, Mrs R. A. L. Cole, comm. L. A. W. Burder. †69, Westmorland; Stockghyll Force: N. Lancs.; Duddon Bridge; the whole population in both localities cleistogamous, though buds and fruits were plentiful; J. E. Lousley.

†133/3. Impatiens parviflora DC. 58, Cheshire; Bideton Hill Woods, Birkenhead, Miss E. M. Lind. *†95. Moray; Spey Bay, mouth of R. Spey, Lady Birchall.

*†133/4. Impatiens glandulifera Royle. 13, W. Sussex (W.-Dod; 1937, 101). Add 14, E. Sussex to *C.F.* (W.-Dod; *loc. cit.*): see *B.E.C. 1923 Rep.*, 176 (1924), for previous record.—Ed. †16, W. Kent; Lewisham: Catford: Sydenham, D. McClintock.

151/2b. Ononis repens L., var. horrida Lange. 3, S. Devon; cliff south of Mt. Batten R.A.F. Station, Plymouth, E. M. Phillips.

152/1. Trigonella ornithopodioides DC. 52, Anglesey; Cemlyn Bay and Trearddur Bay, A. L. Still.

†153/1b. Medicago Falcata L., var. tenuifoliolata Vuyck. To record in *B.E.C. 1934 Rep.*, 823 (1935), add "Det. J. E. Lousley."—L. A. W. Burder.

153/4b. Medicago hispida Gaertn., var. denticulata (Willd.) Wohlfarth. 3, S. Devon; Kingsteignton, G. T. Fraser, det. J. S. L. Gilmour. *67, S. Northumberland; Temperley (1937 B, 52).

153/5. Medicago arabica Huds. 7, N. Wilts; near Seend, Grose (1937; 87).

*†153/6. Medicago minima (L.) Bartal. 13, W. Sussex, probably only casual (W.-Dod; 1937, 109).

†153/27. Medicago laciniata (L.) Mill. 39, Staffs; Burton-on-Trent, R. C. L. Burges, det. P. Aellen.

†153/35. **Medicago Nöeana** Boiss., *Diagn.*, Ser. 2, *2*, 10 (1856). Alien, Orient. 6, N. Somerset; Ashton Gate tip, Mrs C. I. Sandwith.

†154/4. Melilotus indica (L.) All. 66, Durham; add to *C.F.*, not N.C.R.: *67, S. Northumberland; both Temperley (1937 B, 52).

155/2f. Trifolium pratense L., var. leucochraceum Aschers. & Prantl. 41, Glamorgan; Port Talbot Burrows, Miss M. Thomas.

*155/3. Trifolium ochroleucum Huds. 14, E. Sussex (W.-Dod; 1937, 113).

*†155/4. Trifolium incarnatum L. 13, W. Sussex (W.-Dod; 1937, 114).

155/8. Trifolium squamosum L. 16, W. Kent; by canal, Higham, in full flower on the exceptionally late date, September 25th, J. E. Lousley.

155/10. Trifolium scabrum L. 23, Oxon.; near Broughton: a very rare plant in the county; J. P. M. Brenan, J. F. G. Chapple and R. Melville.

155/11. Trifolium striatum L. 7, N. Wilts.; Okus, Swindon (imperilled by quarrying); Little Hinton, Grose (1937; 87).

155/11b. Trifolium striatum L., var. erectum Gaspar. 3, S. Devon; Seaton, Sir M. Abbot Anderson and G. T. Fraser. 8, S. Wilts.; Whaddon, 1937, in good quantity but threatened by building, Miss B. Gullick.

*155/17. Trifolium glomeratum L. 13, W. Sussex (W.-Dod; 1937, 117).

†155/19. Trifolium agrarium L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 119): see *J.B.*, 14 (1906), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*). *†16, W. Kent; old pit near Greenstreet Green, near Farnborough, J. E. Lousley and H. W. Mansfield.

*155/22. Trifolium filiforme L. 74, Wigtown; Galloway, above Morroch Bay, A. J. Wilmott.

†155/24. TRIFOLIUM PANNONICUM Jacq. 59, S. Lancs.; railway bank near Aintree, J. D. Massey (*N.W. Nat.*, *12*, No. 3, 307).

*160/4. LOTUS ULIGINOSUS Schkuhr. 108, W. Sutherland; Island of Handa, very rare, one or two plants only, J. W. and H. Heslop Harrison (1937; 3).

160/4b. LOTUS ULIGINOSUS Schkuhr, var. GLABER Bréb. 10, Wight; Shanklin, L. A. W. BURDER.

*†163/1. GALEGA OFFICINALIS L. 17, Surrey; naturalized on the railway bank between South Merton and South Morden, with white and mauve flowers, A. G. BROWN, comm. D. B. FANSHAWE.

*†170/1. CORONILLA VARIA L. 8, S. Wilts.; near Newton Tony, J. D. GROSE. †Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 123): see *J.B.*, 21 (1909), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*). †44, Carmarthen; hedge near Llandefaelog, D. EVANS, comm. DEPT. BOT., NAT. MUS. WALES. [Add to *C.F.*: see *Welsh Flowering Plants* for previous record.—ED.]

†173/4. **Onobrychis squarrosa** Viv., *Fl. Aegypt. Arab. Diagn.*, 14 (1830). Alien. Eastern Mediterranean region. 6, N. Somerset; Ashton Gate tip, Mrs C. I. SANDWITH.

†174(2). **Arachis** L., *Gen. Pl.*, ed. 5, 329 (1754).

†174(2)/1. **Arachis hypogaea** L., *Sp. Pl.*, ed. 1, 741 (1753). Cult. in tropical regions, origin probably E. trop. S. America. 41, Glamorgan, rubbish heap, Penarth Road, Cardiff, Mrs SANDWITH, J. P. M. BRENAN and R. L. SMITH. [It seems strange that this is the first British record for the common Pea-nut: there were three nice plants, each in flower, but no pods were formed.—R.L.S.]

176/13i. VICIA ANGUSTIFOLIA (L.) Reichard, var. LUTESCENS Corb. 3, S. Devon; hedgebank about ½ mile from the sea, Little Dartmouth, 1936, J. F. G. CHAPPLE, det. A. J. WILMOTT. [First recorded for Britain from Cornwall and Essex by C. E. Salmon in *Trans. Linn. Soc.*, 1926. Dr G. C. Druce in *B.E.C. 1927 Rep.*, 304 (1928), gave this name to a plant gathered by him at St Osyth, Essex, in 1898. The specimen, however, which is in Herb. Druce, is *V. lutea* L.—J.F.G.C.]

†176/21. VICIA CALCARATA Desf. (*V. monanthos* Retz., non Desf.) 39, Staffs.; Burton-on-Trent, R. C. L. BURGES.

*†178/1. LATHYRUS LATIFOLIUS L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 129).

178/2. LATHYRUS SYLVESTRIS L. 45, Pembroke; rock face, Freshwater Bay East, J. F. G. CHAPPLE.

†178/3. Lathyrus tuberosus L. Add 14, E. Sussex to *C.F.* (W.-Dod; 1937, 129): see *Science Gossip*, 224 (1888), for previous record.—Ed. *†21, Middlesex; Chiswick, embankment of Thames, 1933, still there 1937, E. B. Bangerter, det. and comm. A. J. Wilmott. *†27, E. Norfolk; Kelling, near Holt, a little group of two or three plants growing among bracken, Mrs Gomersal. *†61, S.E. Yorks.; King George Dock, Hull, A. K. Wilson.

†178/7. Lathyrus hirsutus L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 128): see *B.E.C. 1911 Rep.*, 81 (1912), for previous record.—Ed.

†178/9. Lathyrus Aphaca L. 3, S. Devon; Seaton, Sir M. Abbot Anderson and G. T. Fraser. †8, S. Wilts.; stubble field, Milford, first seen 1931, now firmly established on grassy bank and apparently permanent, Gullick (1937; 82).

†178/9b. Lathyrus Aphaca L., var. **floribundus** (Velen.) Hegi, *Illust. Fl. v. Mittel-Eur.*, Band iv, *3*, 1591. *L. floribundus* Velenovský, *OBZ, 36*, 228 (1886): *Fl. Bulg.*, 156 (1891). *L. Aphaca* L., f. *floribundus* Maly, *Verh. ZBG. Wien, 54*, 227 (1904). 34, W. Gloster; tip near Bristol, J. P. M. Brenan and Mrs C. I. Sandwith. [This variety differs from typical *L. Aphaca* in having all or very nearly all the inflorescences two- instead of one-flowered. The other characters brought forward by Velenovský in his description of *L. floribundus* seem quite inconstant. It was first recorded from Bulgaria; a plant recorded by Bornmüller from Trieste is probably referable to this variety; Hegi mentions it as having been found at Solothurn in Switzerland. A sheet from Macedonia in Herb. Kew collected by Capt. Harris seems to be this variety.—J. P. M. Brenan.]

178/25b. Lathyrus montanus Bernh., var. tenuifolius Reichb. 12, N. Hants.; pasture near Blackmoor, Liss, E. C. Wallace.

*†183/2. Prunus Padus L. 13, W. Sussex (W.-Dod; 1937, 133): Add †14, E. Sussex to *C.F.* (W.-Dod; *loc. cit.*): see *J.B.*, 14 (1906), for previous record.—Ed.

*†184/10. Spiraea salicifolia L. 4, N. Devon; hedge near Challacombe Mill, C. Amherst. *†13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 133).

*†187/2. Geum rivale L. 14, E. Sussex; probably a garden escape (W.-Dod; 1937, 156).

*187/2×1. Geum rivale L. × urbanum L. = × intermedium Ehrh. 13, W. Sussex (W.-Dod; 1937, 156). *H.9, Clare; Ballyvaghan, W. H. Hardaker.

*†188/1. Fragaria moschata Duch. 14, E. Sussex (W.-Dod; 1937, 156-7).

189/3d. Potentilla Anserina L., var. sericea Hayne. 3, S. Devon; marshy meadow, Cornwood, G. T. Fraser.

†189/11. Potentilla norvegica L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 157): see *J.B.*, 16 (1906) for previous record.—Ed. *†35, Monmouth; waste ground, Redbrook, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales.

189/25b. Potentilla palustris (L.) Scop., forma sericea (Wolf) (var. *villosa* (Lehm.) Druce of *B.P.L.*). 62, N.E. Yorks; very well marked at Pilmoor, Mrs Foggitt, Miss C. M. Rob, J. E. Lousley and J. E. Woodhead.

*190/1. Alchemilla hybrida Mill. = *A. pubescens* Lam. according to various authors, e.g. Salmon. H.29, Leitrim; limestone pastures, O'Rorke's Table, Dromohaire, 1933, R. Ll. Praeger, det. A. J. Wilmott. (New to Ireland).

190/4. Alchemilla minor Huds. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 160): see *J.B.*, 410 (1901), for previous record. [Under 190/1. *A. vulgaris* L. (aggregate) in *C.F.* delete 13 as one of the exceptions.—Ed.] 19, N. Essex; ride in wood near Widdington, P. M. Hall.

191/2. Agrimonia odorata (Gouan) Mill. 3, S. Devon; Cornwood: 4, N. Devon; Bridestowe; W. Keble Martin and G. T. Fraser. 45, Pembroke; Orielton, J. F. G. Chapple.

†193/2. Poterium polygamum W. & K. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 161): see *J.B.*, 16 (1906), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*).

193/4. Poterium officinale (L.) A. Gray. 12, N. Hants.; sparingly in a meadow by the Blackwater, Bramshill, P. M. Hall and E. C. Wallace.

194. Rosa L. determined by A. H. Wolley-Dod (except in case of 194/18f and 194/18g).

194/4e. Rosa micrantha Sm., var. septicola (Déségl.) Gren., "with slightly hispid fruit." 23, Oxon.; chalk hill, Hartslock Woods, H. J. Riddelsdell.

194/6g. Rosa canina L., var. flexibilis (Déségl.) Rouy. 23, Oxon.; chalk hill, Hartslock Woods, H. J. Riddelsdell.

194/6l. Rosa canina L., var. spuria (Pug.) W.-Dod. 23, Oxon.; chalk hill, Hartslock Woods, H. J. Riddelsdell.

*194/9. Rosa Blondaeana Rip. 13, W. Sussex and *14, E Sussex (W.-Dod; 1937, 167).

*194/12. Rosa Afzeliana Fr. 14, E. Sussex (W.-Dod; 1937, 168).

194/15. Rosa rubiginosa L. 22, Berks.; Woodon Hill behind Streatley, H. J. Riddelsdell.

*194/16. Rosa agrestis Savi. 13, W. Sussex (W.-Dod; 1937, 172).

*194/18. Rosa obtusifolia Desv. 14, E. Sussex (W.-Dod; 1937, 169).

194/18f. Rosa obtusifolia Desv., var. Borreri (Woods) W.-Dod. 66, Durham; Bishopley: 67, S. Northumberland; Corbridge and Falstone, J. W. Heslop Harrison (*Vasc.*, *23*, No. 4, 157, as var. of *R. tomentella* (agg.), which "seems to be much more widely spread than has been supposed.") [Add 66 and 67 to *C.F.* and see Baker and Tate, *Flora of Northumberland and Durham*, 163, 1868, for previous records.—Ed.]

194/18g. Rosa obtusifolia Desv., var. sclerophylla (Scheutz) W.-Dod. 68, Cheviotland; near Craster, J. W. Heslop Harrison (*loc. cit.*). [Add to *C.F.* and see Baker and Tate, *loc. cit.*, for previous record.—Ed.]

*194/19. Rosa tomentosa Sm. 13, W. Sussex (W.-Dod; 1937, 170).

194/19d. Rosa tomentosa Sm., var. pseudo-cuspidata (Crép.) Rouy. 22, Berks; near Streatley: 23, Oxon; near Goring; H. J. Riddelsdell.

194/19f. Rosa tomentosa Sm., var. scabriuscula Sm., "forma." 14, E. Sussex; Hindleap, H. J. Riddelsdell.

194/19h. Rosa tomentosa Sm., var. Brittoni W.-Dod, "forma." 23, Oxon.; Cane End, H. J. Riddelsdell. ["I have had this form from Kingston, Oxon (Druce): it is off-type in having eglandular leaflets, and is less coarsely serrate than the Kent and Surrey form."—A. H. W.-D.]

*194/20e. Rosa Sherardi Davies, forma pseudo-mollis (E. G. Baker) W.-Dod. 33, E. Gloster; Aston Farm, Bourton-on-the-Hill, H. J. Riddelsdell.

†195/9. Sorbus intermedia (Ehrh.) Pers. 88, Mid Perth; a single tree at edge of wood by road, Glen Lyon, P. M. Hall and E. C. Wallace.

*†195/14. Sorbus latifolia (Lam.) Pers. 58, Cheshire; small tree in wood, Newton, near Chester, C. Waterfall, *B.E.C. 1936 Rep.*, 400, 1937.

195/16. Pyrus germanica (L.) Hook. fil. Add 13, W. Sussex and 14, E. Sussex to *C.F.* (W.-Dod; 1937, 176): see *J.B.*, 17 (1906), for previous records.—Ed.

†195/17. Pyrus Cydonia L. 41, Glamorgan; three trees in a wood, Cyn Coed, near Cardiff, L. Pierce, comm. R. L. Smith.

*196/2. Crataegus Oxyacantha L. 13, W. Sussex (W.-Dod; 1937, 176). Add 14, E. Sussex to *C.F.* (W.-Dod; 1937, 177): see *J.B.*, 24 (1909), for previous record.—Ed.

196/2f. Crataegus Oxyacantha L., var. microphylla Druce. 19, N. Essex; Widdington, 1936, J. E. Lousley.

†197/2. Cotoneaster microphylla Wallich. 44, Carmarthen; Mieneiau, D. Evans: 49, Caernarvon; high up on Moel Siabod, alt. 2860 ft., H. L. North; both comm. Dept. Bot., Nat. Mus. Wales.

†201/2. **Mitella caulescens** Nutt. ex Torr. & Gray, *Fl. N. Amer.*, *1*, 586 (1840). 22, Berks; Bagley Wood, D. B. Fanshawe, det. P. Aellen.

*†207/4. Ribes pubescens Hartm. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 179).

207/5. Ribes alpinum L. 54, N. Lincs.; Limber Wood, near Brocklesby, 1936, Miss E. F. Noel, det. and comm. A. J. Wilmott.

*211/1b. Sedum Telephium L., em. Gren. & Godr., subsp. Fabaria (Koch) Schinz & Thellung. 13, W. Sussex (W.-Dod; 1937, 181).

†211/1(2). **Sedum spurium** M. Bieb., *Fl. Taur. Cauc.*, *1*, 352 (1808). This prostrate cultivated species has now escaped in many countries (cf. Hegi, *Ill. Fl. Mitt.-Eur.*, iv, 526). I have received it from:—25, E. Suffolk; on the beach at Aldeburgh, 1929, Col. R. Meinertzhagen: 44, Carmarthenshire; flat grassy piece of ground just outside Carmarthen Town, 1919, D. Hamer in Herb. Arthur Bennett (unnamed). The third specimen in Herb. Mus. Brit.—" On garden wall. Road near Sawrey "—[69, N. Lancs., W. of Windermere] in Herb. C. A. Wright, was presumably part of the garden, and not yet even an escape.—A. J. Wilmott.

*†211/2. Sedum rupestre L. 13, W. Sussex and 14, E. Sussex (W.-Dod; 1937, 183).

*†211/3. Sedum reflexum L. 70, Cumberland; Watermillock, A. H. Carter, comm. J. E. Lousley.

†211/7. Sedum album L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 182): see *J.B.*, 17 (1906), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*). †70, Cumberland; well-established on rocks by Ullswater, Pooley Bridge, A. H. Carter and J. E. Lousley.

*†211/10. Sedum dasyphyllum L. 13, W. Sussex (W.-Dod; 1937, 181).

213/1. Drosera anglica Huds. For "13, W. Sussex" in *C.F.* substitute "14, E. Sussex, extinct." W.-Dod (1937; 184) gives no records at all for 13 and only two for 14, one of which was probably an error for *D. longifolia* L. The other was made by Sherard in 1724, since when the plant has not been seen.—Ed.

213/2. Drosera longifolia L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 184-5): see *J.B.*, 17 (1906), for previous record.—Ed.

216/1. Myriophyllum spicatum L. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

216/2. Myriophyllum alterniflorum DC. 4, N. Devon, Tawton; W. Keble Martin and G. T. Fraser.

217/1c. Callitriche stagnalis Scop., var. platycarpa (Kuetz.). 57, Derby; Dovedale, Miss E. S. Todd, det. C. E. Britton. [Add to *C.F.*: for previous records, including this locality, see Linton, *Flora of Derbyshire*, 150 (1903).—Ed.]

*217/3. Callitriche palustris L., em. Rendle & Britt. 14, E. Sussex (W.-Dod; 1937, 187).

*217/5. Callitriche intermedia Hoffm. 13, W. Sussex (W.-Dod; 1937, 188). 49, Caernarvon; Llyn Idwal, with var. *angustifolia* (Hoppe) Druce and transitional forms, J. F. G. Chapple and N. D. Simpson.

217/5e. Callitriche intermedia G. F. Hoffm., var. pedunculata (DC.) Druce. 8, S. Wilts.; Landford Common, J. D. Grose.

218/1. Peplis Portula L. 7, N. Wilts.; Somerford Common: Flisteridge Wood; Grose (1937; 87).

*†219/2. Lythrum Hyssopifolia L. 14, E. Sussex (W.-Dod; 1937, 189). †39, Staffs.; Burton-on-Trent, J. P. M. Brenan and J. Chapple. †61, S.E. Yorks.; King George Dock, Hull, A. K. Wilson, Miss C. M. Rob and W. A. Sledge.

In *B.E.C. 1921 Rep.*, 124 (1922) and also in "The Flora of Leicestershire and Rutland" (1933), this species is incorrectly recorded as having been found by me at Husbands Bosworth, Leics. I have never seen or recorded this species from this or any other locality. The error is due to the late A. R. Horwood, to whom I showed three specimens of a *Lythrum* found growing on waste ground under trees near the stable of the then uninhabited old vicarage at Sibbertoft Coombes, Northants., in August 1920, in association with *Lappula echinata* Gilib., *Sisymbrium altissimum* L., *Thlaspi arvense* L., *Lepidium ruderale* L., *Polygonum Convolvulus* L., and other weeds. He at first glance mistook them for *L. Hyssopifolia*, but subsequently named them *L. alatum*. The specimens were later sent to Dr Druce, who deter-

mined them as *Lythrum meonanthum* Link, under which name the record was published in his "Flora of Northamptonshire," 1930, p. 294 (ascribed by a slip to E. A. Ellis).—A. E. Ellis.

†219(2). **Punica** L.

†219(2)/1. **Punica Granatum** L., *Sp. Pl.*, ed. 1, 472 (1753). (The Pomegranate). Alien. Medit. Reg. to W. Himalaya, and cult. 6, N. Somerset; a single bush 4-5 ft. high by the R. Avon, Bath, T. H. Green (Sandwith; 1936, 120).

220/5. Epilobium tetragonum L., emend. Curt. 3, S. Devon; Newton Abbot tip, Miss E. S. Todd. 61, S.E. Yorks.; King George Docks, Hull, W. A. Sledge, Miss C. M. Rob and A. K. Wilson. *64, Mid West Yorks.; Ledstone, W. A. Sledge and G. A. Nelson. Last two records both det. G. M. Ash.

220/7. Epilobium obscurum Schreb. 45, Pembroke; Orielton, J. F. G. Chapple.

220/7×5. Epilobium obscurum Schreb. × tetragonum L., emend. Curtis. 61, S.E. Yorks.; King George Docks, Hull, W. A. Sledge, Miss C. M. Rob and A. K. Wilson, det. G. M. Ash.

*†220/7(2). Epilobium adenocaulon Hausskn. 14, E. Sussex (W.-Dod; 1937, 191). 16, W. Kent; delete record in *B.E.C. 1936 Rep.*, 255 (1937). *†20, Herts; Tring, J. P. M. Brenan. *†39, Staffs; Burton-on-Trent, J. P. M. Brenan and J. Chapple.

220/7(2)×4. Epilobium adenocaulon Hausskn. × parviflorum Schreb. 34, W. Gloster; Avonmouth Docks, 1935, C. I. Sandwith (1937, 177), det. G. M. Ash.

220/7(2)×10. Epilobium adenocaulon Hausskn. × montanum L. 34, W. Gloster; Avonmouth Docks, 1935, C. I. Sandwith (1937, 177), det. G. M. Ash.

220/8. Epilobium roseum Schreb. 19, N. Essex; ditch in lane, Lexden, E. C. Wallace. 23, Oxon; Wheatley, J. F. G. Chapple.

220/9. Epilobium lanceolatum Seb. & Maur. Remove brackets from 13, W. Sussex in *C.F.* (W.-Dod; 1937, 190). *14, E. Sussex (W.-Dod; *loc. cit.*).

†220/15. Epilobium nummulariifolium R. Cunn. 59, S. Lanes.; railway cutting, Aughton, J. D. Massey (*N.W. Nat.*, *12*, No. 3, 307).

221/1. Ludvigia palustris (L.) Elliott. In addition to the locality in 14, E. Sussex, where the species is now extinct, quoted in *C.F.*, W.-Dod (1937; 193) also refers to a locality in 13, W. Sussex, where it is also extinct, if ever discovered.—Ed.

†223/1. Oenothera biennis L. Add 13, West Sussex to *C.F.* (W.-Dod; 1937, 193): see *J.B.*, 17 (1906), for earlier record. *†14, E. Sussex (W.-Dod; *loc cit.*).

*†223/2. Oenothera Lamarkiana Ser. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 194).

225/3. Circaea alpina L. 69, Westmorland; Glencoyne Dale, Ullswater, very typical, A. H. Carter and J. E. Lousley.

†239/5. **Eryngium giganteum** Bieb., *Fl. Taur. Cauc.*, *1*, 201 (1808). Caucasus. 16, W. Kent; tip at Green Street Green, J. P. M. Brenan.

245/5. Bupleurum tenuissimum L. 54, N. Lincs.; by the Witham below Boston, E. C. Wallace.

246/1. Trinia glauca (L.) Dum. 7, N. Wilts.; this was recorded in *B.E.C. 1932 Rep.*, 103 (1933), but no specimens were kept and extensive searches by the original finder and others have failed; the record must remain doubtful.—Grose (1937; 88).

†250/1. Carum Carvi L. Add 13, W. Sussex to *C.F.* (W.-Dod; 1937, 200): see *J.B.*, 18 (1906), for earlier record. *†14, E. Sussex (W.-Dod; *loc. cit.*).

250/2. Carum verticillatum Koch. 44, Carmarthen; Mynydd Sylen, D. Evans, comm. Dept. Bot., Nat. Mus. Wales.

*†250/3. Carum Petroselinum (L.) Benth. & Hook. fil. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 199-200).

*†257/1. Myrrhis Odorata Scop. 8, S. Wilts.; Sutton Mandeville, near Church, casual, Gullick (1937; 82). *†17, Surrey; well-established in a valley north of Haslemere waterworks, J. G. Lawn.

259/1. Scandix Pecten-veneris L. 66, Durham; near Birtley, J. W. Heslop Harrison (*Vasc.*, *23*, No. 3, 117).

263/1. Foeniculum vulgare Mill. Delete brackets from 14, E. Sussex in *C.F.* (W.-Dod; 1937, 205).

*265/1. Oenanthe aquatica (L.) Poir. 68, Cheviotland; Reaveley Burn and Goswick, a single plant in each case, J. E. Hull (*Vasc.*, *22*, No. 4, 157 (1936)): near Wooler, K. B. Blackburn (*Vasc.*, *23*, No. 3, 118).

*265/2. Oenanthe fluviatilis Coleman. 13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 208).

265/6. Oenanthe Lachenalii C. Gmel. 7, N. Wilts.; near Wootton Bassett, Grose (1937; 88).

276/2. Peucedanum officinale L. Add to *C.F.* 13, W. Sussex, extinct (W.-Dod; 1937, 209): first record *Ray Cat.*, ed. 1, 239 (1670).

277/2b. Heracleum sphondylium L., var. angustifolium Huds. 88, Mid Perth; roadside, Fortingall, E. C. Wallace and R. Mackechnie.

*†279/1. Coriandrum sativum L. 27, E. Norfolk; Norwich, 1930, L. A. W. Burder. *†62, N.E. Yorks.; Whitby, H. Britten, comm. W. A. Sledge.

*†283/2. Caucalis daucoides L. 14, E. Sussex (W.-Dod; 1937, 212).

*283/4. Caucalis arvensis Huds. 61, S.E. Yorks.; between Cliffe and Holme-on-Spalding Moor, A. K. Wilson.

†287/2b. Sambucus nigra L., var. laciniata L. 13, W. Sussex, hedgerow, Rudgwick, E. C. Wallace.

†287/3. Sambucus Ebulus L. 7, N. Wilts.; abundantly established near Sevenhampton, Grose (1937; 88). †8, S. Wilts.; near Enford, Gullick (1937; 82). †63, S.W. Yorks.; Raventhorpe, P. H. Cooke.

†289/1. Symphoricarpus racemosus Michx. 44, Carmarthen; Llangendeirne, D. Evans, comm. Dept. Bot., Nat. Mus. Wales.

291/5. Lonicera Xylosteum L. Add to *C.F.* 14, E. Sussex, status doubtful (W.-Dod; 1937, 216).

†291/7. **Lonicera japonica** Thunb., *Fl. Jap.*, 89 (1784). Sect. Nintooa DC. Alien. Japan, Corea, China. 3, S. Devon; well established, Weir Quay, Bere Ferrers, E. M. Phillips.

295/1. Rubia peregrina L. 34, W. Gloster; Kingscote, very near the boundary-line between 33 and 34, J. W. Haines. 45, Pembroke; Broadhaven Bay, J. F. G. Chapple.

296/5. Galium sylvestre Poll. 7, N. Wilts.; the record in *B.E.C. 1933 Rep.*, 529 (1934), was an error, immature specimens of *G. hercynicum* Weig. having been misidentified.—Grose (1937; 88).

296/10. Galium tricorne Stokes. 7, N. Wilts.; Sevenhampton: Foxhill, near Liddington; Grose (1937; 88).

†296/12b. Galium Vaillantii DC. For 14, E. Sussex in *C.F.* read 13, W. Sussex (W.-Dod; 1937, 220).

298/3. Asperula cynanchica L. 45, Pembroke; Broadhaven Bay, J. F. G. Chapple.

†298/5. Asperula arvensis L. 67, S. Northumberland; waste ground near Forest Hall, M. E. Urton (*Vasc.*, *23*, No. 4, 156).

301/1. Valeriana officinalis L. Add to *C.F.* 14, E. Sussex (W.-Dod; 1937, 223): see *J.B.*, 18 (1906), for earlier record.

†301/4. Valeriana pyrenaica L. 5, S. Somerset; in a wooded combe, Dulverton, C. Amherst.

304/3. Valerianella dentata (L.) Poll. 46, Cardigan; near Tresaith, W. R. Roberts, comm. Dept. Bot., Nat. Mus. Wales.

304/4. Valerianella carinata Loisel. 1, W. Cornwall; wall by roadside, Ruan Minor: roadside bank, Cadgwith, Mrs C. I. and N. Y. Sandwith. 12, N. Hants; Hazeley Heath, G. A. R. Watts. *13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 224).

*304/5. Valerianella rimosa Bast. 13, W. Sussex (W.-Dod; 1937, 225).

306/2. Dipsacus pilosus L. 7, N. Wilts.; Hodson: Whetham Woods; Grose (1937; 88). 63, S.W. Yorks.; Kirk Smeaton, W. A. Sledge.

†307/3. Cephalaria tatarica Schrad. 3, S. Devon; railway bank, Mutley, Plymouth, E. M. Phillips.

†318/20. Aster Linosyris (L.) Bernh. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 228): see *J.B.*, 26 (1909) for earlier record.

320/1. Erigeron borealis Vierh. 88, Mid Perth; north of Glen Lyon, E. C. Wallace and R. Mackechnie.

†320/3. Erigeron canadensis L. 3, S. Devon; The Quay, Exmouth; F. M. Day. †7, N. Wilts.; Sandridge, J. D. Grose. †8, S. Wilts., since 1935 increasingly abundant on roadsides around Whaddon sandpits, near Salisbury, Gullick (1937; 82). Add to *C.F.* †13, W. Sussex and †14, E. Sussex (W.-Dod; 1937, 228): for previous records see *J.B.*, 18 (1906), and *J.B.*, 26 (1909), respectively. †20, Herts.; Hamper Mill, Rickmansworth, F. M. Day.

†320/10b. Erigeron mucronatus DC. 22, Berks.; Abingdon, naturalized on stone retaining-wall of Thames, J. Burtt Davy (*J.B.*, *75*, 235).

326/1. Antennaria dioica (L.) Gaertn. 33, E. Gloster; Foxcote, Miss L. Abell.

†327/1b. Anaphalis margaritacea C. B. Clarke, var. subalpina Gray. 85, Fifeshire; North Queensferry, E. C. Wallace. [Add to *C.F.*, but not N.C.R., see *B.E.C. 1919 Rep.*, 659 (1920).—Ed.]

328/3. Gnaphalium sylvaticum L. 3, S. Devon; Wooston, Moretonhampstead, 1936, G. T. Fraser: Helton, Bridford, W. Keble Martin and G. T. Fraser.

*328/4. Gnaphalium norvegicum Gunn. 109, Caithness; rough pasture near Ackergill, August 1927, Col. R. Meinertzhagen: specimen in Herb. Meinertzhagen confirmed by A. J. Wilmott; photo in Herb. Mus. Brit. [I have been over the ground twice, but too early in the year for success: I only observed young *G. sylvaticum* L., var. *nigrescens* Gren., but Col. Meinertzhagen had collected both species, and there is no doubt of the identification.—A.J.W.]

†333/1. Inula Helenium L. 8, S. Wilts.; still on roadside at Dunge, near Trowbridge, whence there is a specimen dated 1883 in the W.A.S. Herbarium at Devizes, Gullick (1937; 82). †44, Carmarthen; St Ishmaels, D. Evans: †46, Cardigan; Cwm Duad, on the road from Newcastle Emlyn, W. R. Roberts; both comm. Dept. Bot., Nat. Mus. Wales.

†339/6. **Ambrosia elatior** L. (*A. artemisiaefolia* Aschers. & Graebn., non L.) 61, S.E. Yorks.; Olympia sidings, J. Kendall, comm. W. A. Sledge, det. P. Aellen.

†341/3. Xanthium spinosum L. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser. †11, S. Hants.; waste ground, Southampton Docks, A. J. Ingram, comm. J. E. Lousley.

†350/2. Verbesina encelioides Benth. & Hook. 56, Notts.; Colwick, near Nottingham, R. Bulley, det. Kew.

†351/1. Guizotia abyssinica Cass. 3, S. Devon; Newton Abbot tip, Miss E. S. Todd. †23, Oxon.; waste ground, Oxford, J. P. M. Brenan and J. F. G. Chapple.

353/1. Bidens cernua L. 66, Durham; Cocken Woods, J. W. Heslop Harrison (*Vasc.*, *23*, No. 3, 117).

†356/1. Hemizonia pungens Torrey & Gray. 8, S. Wilts.; abundant on waste ground near Fisherton Recreation Ground, Salisbury, 1935, Gullick (1937; 83).

367/1. Diotis maritima (L.) Cass. Delete record in *C.F.* for 13, W. Sussex (W.-Dod; 1937, 162).

368/2. Anthemis nobilis L. 5, S. Somerset; Holmcote, C. Amherst.

†370/13b. Chrysanthemum Parthenium (L.) Bernh., forma **hortense** (Schur) Beck. 16, W. Kent; old chalk-pit, Greenstreet Green, near Farnborough: this is the plant frequently cultivated in cottage gardens and entered in *B.P.L.* as var. *flosculosum* DC. in black type: whereas the typical form of the species may be justifiably claimed as native in a few districts, the variety is almost certainly always an outcast from cultivation.—J. E. Lousley.

371/1c. Matricaria inodora L., var. salina Bab. 4, N. Devon; Braunton Marshes, C. Amherst.

378/1. Artemisia Absinthium L. 7, N. Wilts.; Draycot, J. D. Grose.

*†380/3. Petasites fragrans Presl. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 241).

*†381/1. Doronicum Pardalianches L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 242).

*†381/2. Doronicum plantagineum L. 13, W. Sussex (W.-Dod; 1937, 242).

383/6c. Senecio erucifolius L., var. subintegrifolius Druce. 3, S. Devon; Littleham, G. T. Fraser.

†383/7. Senecio squalidus L. 54, N. Lincs.; slag-heaps, Scunthorpe, 1936, Miss J. Gibbons (Dallman; 1937 A, 61).

†383/8. Senecio viscosus L. 8, S. Wilts.; Salisbury Station, casual, Gullick (1937; 82). *13, W. Sussex (W.-Dod; 1937, 242).

383/10e. Senecio vulgaris L., var. radiatus Koch. 3, S. Devon; Plympton St Mary, E. M. Phillips. 40, Salop; Wem and Whitchurch, P. H. Cooke.

†383/31. Senecio Cineraria DC. 3, S. Devon; Plymouth: a recent addition to the flora of the Hoe, where it is establishing itself in the crevices of limestone walls, having spread from nearby flower-beds.—E. M. Phillips. †Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 245): see *B.E.C. 1921 Rep.*, 385 (1922), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*).

†395/3. Carduus pycnocephalus L. 3, S. Devon; still in good quantity on Plymouth Hoe itself, on the slope below the Citadel and elsewhere, E. M. Phillips (*J.B.*, *75*, 267).

395/3b. Carduus tenuiflorus Curtis. 7, N. Wilts.; spreading from its original station on Tan Hill: it now grows also on the southern slope of the hill and in the Wansdyke to the north-west.—Grose (1937; 88, as *C. pycnocephalus* L., var. *tenuiflorus*).

396/4×6. Cirsium acaule (L.) Weber × C. tuberosum (L.) All. 7, N. Wilts.; Avebury: though apparently first recorded only in 1924, the hybrid is now as plentiful as pure *C. tuberosum*.—Grose (1937; 88).

†396/13. Notobasis syriaca (L.) Cass. 6, N. Somerset; waste ground, Bristol, Mrs C. I. and N. Y. Sandwith. †39, Staffs.; Burton-on-Trent, J. P. M. Brenan and J. Chapple.

397/1. Onopordon Acanthium L. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 252): see *J.B.*, 19 (1906), for earlier record. 16, W. Kent; Hayes, D. McClintock.

399/1. Silybum Marianum Gaertn. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 252): see *J.B.*, 20 (1906), for earlier record. *14, E. Sussex (W.-Dod; *loc. cit.*).

405/7. Centaurea pratensis Thuill. 22, Berks.; Wellington College, Miss E. S. Todd, det. C. E. Britton.

405/11f. Centaurea nemoralis Jord., var. Debeauxii C. E. Britton. 22, Berks.; near Crowthorne, Miss E. S. Todd, det. C. E. Britton.

†405/26. Centaurea orientalis L. 41, Glamorgan; Cardiff Docks, Mrs C. I. Sandwith, J. P. M. Brenan and R. L. Smith.

†405/31. Centaurea solstitialis L. 16, W. Kent; West Wickham, D. McClintock.

†405/35b. Centaurea pallescens Delile, var. hyalolepis Boiss. 39, Staffs.; Burton-on-Trent, J. P. M. Brenan and J. Chapple.

†405/43. Centaurea diluta Ait. 62, N.E. Yorks.; Whitby, H. Britten, comm. W. A. Sledge.

†406(2). **Tetramorphaea** DC. in Guill., *Arch. Bot.*, *2*, 331 (1833).
†406(2)/1. **Tetramorphaea Belangeriana** DC., *Prodr.*, *6*, 609 (1837). Alien, Persia. 41, Glamorgan, Splott, Miss E. S. Todd, det. Mus. Brit.

†407/3. Carthamus tinctorius L. 67, S. Northumberland; waste ground near Forest Hall, M. E. Urton (*Vasc.*, *23*, No. 4, 157).

†409/1. Cichorium Intybus L. 8, S. Wilts.; now a scarce plant in the v.-c., but there are persistent and increasing colonies near Salisbury Station and in Wood Road, Durrington, Gullick (1937; 82).

*410/1. Arnoseris minima (L.) Schw. & K. 13, W. Sussex (W.-Dod; 1937, 259).

*†419/8. Hieracium brunneo-croceum Pugsl. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 268). †61, S.E. Yorks.; Hessle, T. Stainforth, comm. W. A. Sledge: near Howden Station, A. K. Wilson. *†63, S.W. Yorks.; Worsborough Reservoir, near Barnsley, E. G. Bayford, comm. A. A. Dallman (*N.W. Nat.*, *12*, No. 4, 407). *†75, Ayr; Largs: †99, Dumbarton: between Kilpatrick and Bowling (add to *C.F.* but not N.C.R.): *†100, Clyde Islands; Bute; all G. W. Phillips (*NW. Nat.*, *12*, No. 3, 306).

*419/77. Hieracium britannicum F. J. Hanb. H.29, Leitrim; rocks at Scriff Bay, Lough Gill, J. E. Lousley and R. C. L. Burges, det. H. W. Pugsley.

419/89. Hieracium lepistoides K. Johanns., var. sublepistoides Zahn. 12, N. Hants.; bank of lane near Selborne, P. M. Hall and A. J. Wilmott, det. H. W. Pugsley.

419/120b. Hieracium euprepes F. J. Hanb., var. glabratum Linton. 88, Mid Perth; rocky bank of Allt-na-Coire Pheiginn, a tributary of the Keltney Burn, P. M. Hall, det. H. W. Pugsley.

419/207. Hieracium tridentatum Fr. 61, S.E. Yorks.; Willerby, A. K. Wilson, det. Kew.

422/3. Thrincia Leysseri Wallr. (*T. hirta* Roth.) 4, N. Devon; Lynton, C. Amherst.

423/34. Taraxacum spectabile Dahlst. H.27, Sligo; Ben Bulben, J. E. Lousley.

†425/1. Lactuca virosa L. 3, S. Devon; Newton Abbot tip, Wolborough, A. Crawshaw and T. Stephenson. †7, N. Wilts.; Draycot, casual, J. D. Grose.

*425/2. Lactuca Serriola L. 13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 271): there is a previous record in *J.B.*, 23 (1896), for "13 or 14."—Ed. 14, E. Sussex; Newhaven: in view of the determination of var. *dubia* (Jord.) by Mr Lousley in *B.E.C. 1936 Rep.*, 265 (1936), various forms both in flower and fruit were sent to him from three distinct areas at Newhaven, all of which he named "*L. Scariola* L."; areas A and B are half a mile apart and area C is about a mile from both; there has been considerable increase in both quantity and distribution of the plant in the last two or three years, area C this year producing a dense clump, 5 ft. × 3 ft. and 5 ft. in height.—L. A. W. Burder. 15, E. Kent; Shellness, Sheppey, an interesting shingle form with deeply cut leaves, J. E. Lousley. *†19, N. Essex; Hythe Quay, Colchester, G. C. Brown, *B.E.C. 1936 Rep.*, 405 (1937). *†67, S. Northumberland; waste ground near Forest Hall, M. E. Urton (*Vasc.*, *23*, No. 4, 156).

†425/8. Lactuca macrophylla (Willd.) A. Gray. 34, W. Gloster; garden outcast, near Bristol, in a lane leading from Sea Walls to the Avon, 1936, I. Evans (Sandwith; 1937, 180).

432/1b. Jasione montana L., var. major Mert. & Koch. 3, S. Devon; Bigbury, G. T. Fraser. [Mr Fraser informs me that the records under this name in *B.E.C. 1936 Rep.*, 266 (1937), were erroneous, *teste* H. W. Pugsley: the Manaton plant was a very robust specimen of the typical form and the Thurlestone plant was var. *latifolia* Pugsl.—Ed.]

432/1c. Jasione montana L., var. latifolia Pugsl. 3, S. Devon; Burgh Island, Bigbury, G. T. Fraser. H.3, W. Cork; Baltimore, J. E. Lousley and R. C. L. Burges.

*†435/2. Campanula latifolia L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 278).

†435/4. Campanula rapunculoides L. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 279): see *J.B.*, 47 (1906), for previous record. †16, W. Kent; Wilmington: found by Mrs M. le F. Shepherd, who states that it is a troublesome weed in gardens throughout the village; the record is of considerable interest as there are many old records for *C. Rapunculus* L. in the district.—J. E. Lousley. *†29, Cambs.; roadside verge near Royston, E. C. Wallace. †41, Glamorgan; Merthyr Mawr, Miss Rawlins. [Only one previous doubtful record for this species in Glamorgan: remove brackets in *Glamorgan Flowering Plants* and in *C.F.*—E. Vachell.]

*†435/6. Campanula persicifolia L. 14, E. Sussex (W.-Dod; 1937, 280).

*†435/7. Campanula Rapunculus L. 13, W. Sussex (W.-Dod; 1937, 280).

*†435/8. Campanula patula L. 14, E. Sussex (W.-Dod; 1937, 280).

438/2. Vaccinium Myrtillus L. 8, S. Wilts.; Semley Hill. Gullick (1937; 83).

439/1d. Oxycoccus quadripetalus Gilib., var. maculatus Lousl. 68, Cheviotland; Belford Moor, 1936 (ratio of speckled fruits to red about 6: 1): Coldmartin Moss, few fruits seen all speckled; J. E. Hull (*Vasc., 23*, No. 4, 154). The only form observed by G. W. Temperley (*Vasc., loc. cit.*) in Northumberland and Durham is this var. H.20. Wicklow; Broomfield, near foot of Djouce Mountain, O. White, comm. J. E. Lousley.

†439/2. Oxycoccus macrocarpus Pursh. 3, S. Devon; known for many years on rocks in a road-cutting near the Southern Railway Station, Tavistock, Mr Monk, comm. G. T. Fraser. In *B.E.C. 1936 Rep.*, 266 (1937), read " Findlay " for " Melville."—Ed.

441/1. Arctostaphylos Uva-ursi (L.) Spreng. 96, Easterness; at 3000 ft. above Fasnakyle, Cannich, Mrs J. V. Phelps.

444/1. Andromeda polifolia L. 74, Wigtownshire; Mark of Luce Moss, Kirkcowan: Moss of Cree; E. C. Wallace.

445/1b. Calluna vulgaris (L.) Hull, var. incana Reichb. 3, S. Devon; Ilsington and Heytor Down, G. T. Fraser and F. M. Day. 24, Bucks.;

Littlemere Common, near Burnham Beeches, very plentiful: this is a dry sandy eommon, like the Devon stations for this variety: Chudleigh Knighton Heathfield, the Devon station where it is eommonest, is generally mueh drier than Dartmoor, where it is nowhere well developed or common, though fairly widely distributed, only on drier patches: probably the hairiness is an adaptation to dry situations.—F. M. Day.

*†446/7. Erica vagans L. 14, E. Sussex (W.-Dod; 1937, 282).

*†449/1. Daboecia cantabrica K. Koch. 13, W. Sussex, naturalized (W.-Dod; 1937, 282).

*453/2. Pyrola media Sw. 14, E. Sussex (W.-Dod; 1937, 283).

*457/5. Limonium binervosum (G. E. Sm.) C. E. Salmon. 13, W. Sussex (W.-Dod; 1937, 285). 15, E. Kent; Shellness, Sheppey, J. E. Lousley.

*†462/1. Cyclamen hederaefolium Ait. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 287-8).

463/2c. Lysimachia vulgaris L., var. Klinggraefii Abromeit (= forma *maculata* Druce in *B.E.C. 1918 Rep.*, 290 (1919), cf. *J.B.*, 333 (1932), and *B.E.C. 1932 Rep.*, 43 (1933).—Ed.) 11, S. Hants.; margin of Sowley Pond with the typical form of the species, Lady Davy and J. E. Lousley.

†463/7. Lysimachia terrestris (L.) B. S. P. (*L. stricta* Ait.). 69, N. Lancs.; by River Leven, Low Wood: this species has been known since 1885 from the shore of Windermere near the Ferry Hotel (see *Rep. Wats. B.E.C. for 1911-12*, 347 (1913) and specimen in Herb. Kew), which station is about 10 miles by water from the present one: it seems probable that roots have been water-borne from the old locality, and search should be made for further colonies on the intervening river and lake-side.—J. E. Lousley.

467/2b. Anagallis arvensis L., var. carnea Schrank. H.3, W. Cork; Toormore, J. E. Lousley and R. C. L. Burges.

467/3. Anagallis foemina Mill. 3, S. Devon; Kingskerswell, G. T. Fraser, det. F. E. Weiss and E. M. Marsden-Jones.

468/1. Centunculus minimus L. 3, S. Devon; Loddiswell, W. Keble Martin and G. T. Fraser. 8, S. Wilts.; Alderbury Common in small quantity: Copse Corner, Whiteparish.—Gullick (1937; 83). *105, W. Ross; Badaehro and Opinan, near Gairloch, 1936, Miss M. S. Campbell, with F. Druce and A. J. Wilmott.

469/1. Samolus Valerandi L. 7, N. Wilts.; near Wootton Bassett: Toekenham: Inglesham; near Oaksey: Chittoe.—Grose (1937; 88).

473/2. Vinca minor L. 63, S.W. Yorks.; Broeodale Woods, Wentvale, W. A. Sledge.

*476/1. Microcala filiformis Hoffm. & Link. 14, E. Sussex (W.-Dod.; 1937, 293). [This species appears to be extinct in both divisions of Sussex: the latest record for W. Sussex is 1866 and for E. Sussex 1843.—Ed.]

478/1b. Centaurium umbellatum Gilib., var. subcapitatum (Corb.) Gilmour. 1, W. Cornwall; dunes near Gear Gate, Perranporth, 1936, J. E. Lousley, det. J. S. L. Gilmour.

478/1d. Centaurium umbellatum Gilib., var. fasciculare (Duby) Gilmour. 1, West Cornwall; cliffs, Gunwalloe, 1936: 4, N. Devon; Braunton Burrows, 1934: 9, Dorset; cliffs near Portland Bill, 1932; J. E. Lousley, det. J. S. L. Gilmour.

478/2. Centaurium littorale (Turner) Gilmour. Bracket record in *C.F.* for 14, E. Sussex, error (W.-Dod; 1937, 295).

478/2b. Centaurium littorale (Turn.) Gilmour, near var. occidentale (Wheld. & Salm.) Gilmour. 11, S. Hants.; Sinah Common, Hayling Island, 1936, a single specimen only, thought in the field to be possibly of hybrid origin, J. E. Lousley, det. J. S. L. Gilmour.

478/4. Centaurium pulchellum (Swartz) Druce. 3, S. Devon; wet ground, Dawlish Warren: the plants seen covered the range from var. *palustre* (Gaud.) Druce (=var. *Swartziana* of Butcher & Strudwick, *Further Illustr. Brit. Pl.*, t. 248, Z) to var. *ramosissimum* (Gaud.) Gilmour.—G. T. Fraser. 8, S. Wilts.; grass track in Clarendon Wood, Gullick (1937; 83). 13, W. Sussex; grassy rides in St Leonard's Forest, E. C. Wallace.

*478/5. Centaurium tenuiflorum (Hoffmg. & Link) Fritsch. 9, Dorset; coast, 1935, R. Good: 1937, A. W. Graveson (independently). [In the winter of 1935-6 Mr Good sent me a small sheet of dried material, which I determined as above. Further material gathered by myself in 1936 was sent to the British Museum and Kew, where the determination was confirmed by Mr A. J. Wilmott and Mr J. S. L. Gilmour respectively. "9, Dorset" is actually given in *C.F.*, but Mr Chapple tells me that this was an error, the specimen on which it was based being *C. pulchellum* (Sw.) Druce. I think that there is no doubt that this is the first record for the mainland of England. In contrast to the Isle of Wight plant, which is all pink-flowered, the Dorset plant is almost all white-flowered, which Mr Wilmott tells me was the case where he saw it in S. Spain.—P. M. Hall.]

478/7. Centaurium capitatum (Willd. ex Cham.) Britten & Rendle. 3, S. Devon; Berry Head, 1934, J. E. Lousley, det. J. S. L. Gilmour. *13, W. Sussex (W.-Dod; 1937, 295).

480/4. Gentiana Amarella L. 45, Pembroke; near Penally, J. F. G. Chapple, det. H. W. Pugsley as *G. axillaris* F. W. Schmidt, "a curious form, flowering very early (July 31st)."

480/6. Gentiana anglica Pugsl. 8, S. Wilts.; Camp Down, N.W. of Salisbury, in fair quantity: on the Bake, S. of Wylye; Gullick (1937; 83). Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 298, as *G. lingulata* Agardh., var. *praecox* Towns.): see *J.B.*, 48 (1906), for previous record. *14, E. Sussex (W.-Dod; *loc. cit.*).

480/9. Gentiana campestris L. 7, N. Wilts.; Bedwyn Common, J. D. Grose, det. H. W. Pugsley.

*480/9b. Gentiana baltica Murb. 7, N. Wilts.; Bedwyn Common, J. D. Grose, det. H. W. Pugsley. In *C.F.* the distribution figures for this species and *G. campestris* L. are combined. 13, W. Sussex, should be added for the aggregate: W.-Dod (1937; 298) records several W. Sussex stations under *G. campestris* but the opinion is expressed that all Sussex records are likely to be for *G. baltica*.—Ed.

*†482/1. Nymphoides peltatum (L.) Rendle & Britt. 13, W. Sussex (W.-Dod; 1937, 300).

*†486/1. Polemonium caeruleum L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 300-1).

†490/2. Omphalodes verna Moench. 3, S. Devon; near Crab's Park, Paignton, F. M. Day.

†492/3. **Plagiobothrys procumbens** (Colla) A. Gray in *Proc. Amer. Acad.*, *20*, 283 (1885). *Myosotis procumbens* Colla in *Mem. Acc. Torin*, *38*, 130 (1835). Alien, Chile. 6, N. Somerset; waste ground, Bristol, Mrs C. I. Sandwith and J. P. M. Brenan, det. J. P. M. Brenan at Kew.

†497/2. Symphytum tuberosum L. 3, S. Devon; Bere Ferrers, casual, G. T. Fraser: Kingskerswell, casual, 1936, T. Stephenson.

*†497/4. Symphytum peregrinum Ledeb. H.28, Sligo; Drumcliff, abundant, J. E. Lousley and R. C. L. Burges.

*†500/1. Anchusa sempervirens L. 13, W. Sussex (W.-Dod; 1937, 303). *†H.12, Wexford; Gorey, naturalized in quantity by roadside, J. E. Lousley and R. C. L. Burges.

†503/1. Pulmonaria officinalis L. 11, S. Hants.; edge of wood near N. Baddesley, Mrs A. White, comm. P. M. Hall. *†13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 305).

*†503/2. Pulmonaria longifolia Boreau. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 305).

*506/7. Myosotis sylvatica (Ehrh.) Hoffm. 13, W. Sussex (W.-Dod); 1937, 307). 23, Oxon.; wood near Nuneham Courtenay, J. P. M. Brenan.

†506/7b. Myosotis sylvatica (Ehrh.) Hoffm., var. **lactea** Boenn., *Prodromus Florae Monasteriensis*, 56, 1824. A white-flowered form. 23, Oxon.; waste ground, Port Meadow, Oxford, J. F. G. Chapple, det. A. E. Wade.

506/9b. Myosotis collina Hoffm., var. Mittenii Baker. 16, W. Kent; Charleton, 1840, Miss E. Metcalfe. 17, Surrey; Ham, 1899: Esher Common, 1929; J. Fraser. 55, Rutland; S. Luffenham, 1932, M. E. Edmonds. H.21, Dublin; Howth, 1888, J. E. Gamble. Channel Islands; Sark, hollow of Eperquerie cliffs, 1929, F. Ballard and E. A. Golby. [All in Herb. Kew; det. A. E. Wade.]

*†507/2. Lithospermum purpureo-caeruleum L. 14, E. Sussex (W.-Dod; 1937, 308).

†509/2. Echium plantagineum L. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 310): see *J.B.*, 275 (1920), for previous record.

†513/2(2). **Convolvulus stachydifolius** Choisy in DC., *Prodr.*, *9*, 408, (1845). Alien, Orient. Allied to *C. althaeoides* L. but easily distinguished by the short sepals and the very different indumentum of the stem and inflorescence, which is composed of much shorter deflexed hairs. 6, N. Somerset; waste ground, Bristol, Mrs C. I. Sandwith and J. P. M. Brenan.

†517/16. Solanum ciliatum Lam. 41, Glamorgan; rubbish heap, Portheawl, R. L. Smith and F. Norton.

†518/7. Physalis peruviana L. 41, Glamorgan; rubbish heap, Penarth Road, Cardiff, R. L. Smith.

†522/1. Datura Stramonium L. 8, S. Wilts.; Petersfinger, Salisbury, Gulliek (1937; 83). †16, W. Kent; Hayes, D. McClintock.

†527/1. Verbascum phlomoides L. 12, N. Hants; Hazeley Heath, several plants near refuse dump, G. A. R. Watts.

*†527/4. Verbascum virgatum Stokes. 13, W. Sussex (W.-Dod; 1937, 318).

*†527/5. Verbascum Blattaria L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 318).

*†527/6. Verbascum pulverulentum Vill. 35, Monmouth; roadside, Upper Redbrook, S. G. Charles, comm. Dept. Bot., Nat. Mus. Wales. 41, Glamorgan; Neath River, Miss M. Thomas.

527/7. Verbascum Lychnitis L. Bracket record in *C.F.* for 14, E. Sussex, error (W.-Dod; 1937, 317).

532/3. Linaria repens (L.) Mill. 3, S. Devon; Heltor, Bridford, W. Keble Martin and G. T. Fraser. [Recorded from this locality by C. H. Laycock, *c.* 1930, but not published.—G.T.F.] *7, N. Wilts.; Callow Hill, J. D. Grose. *14, E. Sussex (W.-Dod; 1937, 319).

532/3×1. Linaria repens (L.) Mill. × vulgaris Mill. 3, S. Devon; Heltor, Bridford, first Devon record for the hybrid, W. Keble Martin and G. T. Fraser. 34, W. Gloster; disused railway bank, Hallen, 1936, Miss M. Bowen (Sandwith; 1937, 178).

532/7. Linaria minor (L.) Desf. 8, S. Wilts.; abundant on chalk spoil-heaps, lime-kilns on Harnham Hill, Salisbury, Gullick (1937; 83).

532/24. Linaria spuria (L.) Mill. 41, Glamorgan; among shingle, Swanbridge, A. E. Wade, comm. Dept. Bot., Nat. Mus. Wales.

†532/26b. Linaria Cymbalaria (L.) Mill., sub-var. pallidior Rouy. H.5, E. Cork; abundant on walls on E. side of Cork town, J. E. Lousley and R. C. L. Burges.

534/2. Antirrhinum Orontium L. 45, Pembroke; abundant in cultivated fields at Angle and St Ann's Head, J. F. G. Chapple. 46, Cardigan; near Tresaith, W. R. Roberts: *†47, Montgomery; Llanfechain, 1879, R. M. Serjeantson; both comm. Dept. Bot., Nat. Mus. Wales.

*535/3. Scrophularia Neesii Wirtg. 13, W. Sussex (W.-Dod; 1937, 322, as *S. umbrosa* Dum.). 36, Hereford; still at Gosford Bridge, Little Hereford, whence there are early records, J. E. Lousley.

†537/1. Mimulus guttatus DC. 8, S. Wilts.; among water-cress, Coombe Bisset, H. J. Goddard. †17, Surrey; by a stream, Cosford Vale, Thursley, with *M. moschatus* Dougl., E. C. Wallace.

541/1b. Digitalis purpurea L., var. nudicaulis Saunders. 49, Caernarvon; Half-way Station, Snowdon, J. F. G. Chapple and N. D. Simpson.

†542/1. Erinus alpinus L. H.9, Clare; walls between Ballyvaghan and Blackhead, W. H. Hardaker.

543/6. Veronica scutellata L. 7, N. Wilts.; Coate Water: Minety: near Wooton Bassett.—Grose (1937; 88).

543/8. Veronica Anagallis-aquatica L. 34, W. Gloster; ditch between Rangeworthy and Yate Lower Common, 1936, C. and N. Sandwith (1937; 178).

*543/9d. Veronica aquatica Benquerel, var. glandulifera Celak. 3, S. Devon; Forde Bog, Newton Abbot, W. Keble Martin and G. T. Fraser. *7, N. Wilts.; near Hannington Bridge, J. D. Grose. Both det. C. E. Britton.

543/18b. Veronica Tournefortii Gmel., var. Corrensiana (Gmel.) Hayek & Hegi. 33, E. Gloster; Fairford, Lady Davy, det. C. E. Britton.

543/18d. Veronica Tournefortii Gmel., var. Aschersoniana (Lehm.) Hayek & Hegi. 23, Oxon.; Barton, J. F. G. Chapple, det. C. E. Britton.

543/20c. Veronica polita Fries, var. Thellungiana (Lehm.) Hayek & Hegi. 23, Oxon.; wall, Mapledurham, a hairy form, H. J. Riddelsdell, det. C. E. Britton, as *V. didyma* Ten., var. *Thellungiana* Lehm.

†543/24. Veronica Pseudochamaedrys Jacq. 75, Ayr; sand-dunes far from any habitation, near Prestwick, J. R. Lee.

†543/41. Veronica filiformis Sm. H.28, Sligo; grassy bank between Sligo and Ben Bulben, W. H. Hardaker.

545. Euphrasia L. determined by H. W. Pugsley.

*545/3. Euphrasia brevipila Burnat & Gremli. H.9, Clare; near Blackhead, J. E. Lousley and R. C. L. Burges.

545/3b. Euphrasia brevipila Burnat & Gremli, forma subeglandulosa Bucknall. 43, Radnor; Stanner Rocks, J. F. G. Chapple and N. D. Simpson.

545/5d. Euphrasia nemorosa (Pers.) Löhr, var. collina Pugsl. 45, Pembroke; cliffs, Angle, J. F. G. Chapple.

545/9b. Euphrasia curta Fries ex Wettst., var. glabrescens Wettst. 45, Pembroke; sand-dunes, Freshwater Bay West, J. F. G. Chapple.

*545/10b. Euphrasia occidentalis Wettst., var. praecox Buckn. H.12, Wexford; near Lady Island Lake, J. E. Lousley and R. C. L. Burges.

545/10d. Euphrasia occidentalis Wettst., var. calvescens Pugsl. 45, Pembroke; Bullslaughter Bay, J. F. G. Chapple. *H.16, W. Galway; Dogs Bay, Roundstone ("cf. this var."), J. E. Lousley and R. C. L. Burges.

545/12b. Euphrasia frigida Pugsl., var. laxa Pugsl. 88, Mid Perth; a luxuriant form among rushes and Marsh Orchids in a marsh on the left bank of the Allt-na-Coire Pheiginn, a tributary of the Keltney Burn, P. M. Hall and W. A. Sledge.

545/15. Euphrasia micrantha Reichb. 45, Pembroke; cliffs near St David's, J. F. G. Chapple. 64, Mid-West Yorks.; limestone rocks above Gordale Scar: 69, Westmorland; in limestone crevices, Hutton Roof Crag; both unusual habitats for this species, J. E. Lousley.

545/18. Euphrasia confusa Pugsl. 7, N. Wilts.; Whitefield Hill: 8, S. Wilts.; Park Hill, Longleat; J. D. Grose.

545/18. Euphrasia confusa Pugsl., forma albida Pugsl. 65, N.-W. Yorks.; Mirgill Hearne Brocks, Cotherstone Fell at 1400 ft., J. E. Lousley and J. E. Woodhead.

*545/19. Euphrasia Rostkoviana Hayne. H.28, Sligo; shore of Lough Gill near Slish Wood, J. E. Lousley and R. C. L. Burges.

545/19c. Euphrasia Rostkoviana Hayne, var. obscura Pugsl. 49, Caernarvon; Llanberis Marsh, J. F. G. Chapple and N. D. Simpson.

546/4. Bartsia viscosa L. 45, Pembroke; near Bryn Henllan, W. R. Roberts, comm. Dept. Bot., Nat. Mus. Wales.

548/5. Rhinanthus stenophyllus Schur. 7, N. Wilts.; near Ham, Grose (1937; 88). Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 334): see *Top. Bot. Supp.*, *2*, 45 (1929), for previous record. *14, E. Sussex (W.-Dod; *loc. cit.*).

†549/2(2). **Melampyrum barbatum** W. & K., subsp. **barbatum** (W. & K.) Hayek, forma **albicans** (Borbas). 18, S. Essex; waste ground, Dagenham: corolla rich golden-yellow, bracts nearly white, slightly tinged with green: Central and E. Europe; Mrs C. I. and N. Y. Sandwith.

549/3d. Melampyrum pratense L., var. ericetorum D. Oliver. 8, S. Wilts.; Hamptworth, J. D. Grose, det. C. E. Britton.

549/3g. Melampyrum pratense L., var. vulgatum (Pers.) Beck, sub-var. digitatum (Schur) Beauv. 8, S. Wilts.; Whiteparish Common, J. D. Grose. 37, Worcs.; Rough Hill Wood, Cowleigh, F. M. Day and W. W. Boucher, det. C. E. Britton.

*550/4. Orobanche elatior Sutton. 13, W. Sussex (W.-Dod; 1937, 336).

550/7. Orobanche Hederae Duby. 8, S. Wilts.; by Burcombe Church, Gullick (1937; 83).

550/9. Orobanche amethystea Thuill. Bracket record in *C.F.* for 14, E. Sussex, doubtful (W.-Dod; 1937, 337).

550/10. Orobanche minor Sm. 36, Hereford; Chance's Pitch, Colwall, parasitic on *Trifolium dubium* Sibth., F. M. Day and T. Sanger. 64, Mid-West Yorks.; Shipley, M. Smith, comm. W. A. Sledge.

551/1. Lathraea Squamaria L. 33, E. Gloster; Guiting Wood, J. N. Mills. 40, Salop; Bowhills Dingle, W. H. Hardaker.

552/2. Utricularia major Schmidel. 3, S. Devon; Kingsteignton, A. Crawshaw, comm. G. T. Fraser, det. P. M. Hall. Add to *C.F.* 14, E. Sussex (W.-Dod; 1937, 338-9): See *Top. Bot. Supp.*, *1*, 67 (1905), and *J.B.*, 48 (1906), for previous records. 27, E. Norfolk; Wheatfen Broad, Surlingham, E. A. Ellis, det. P. M. Hall. [Add to *C.F.*, but not N.C.R., see *Top. Bot. Supp.*, *1*.—Ed.]

553/1×2. ×Pinguicula Scullyi Druce. H.1, S. Kerry; near Faha; Brandon Mountain; Connor Hill Pass: H.3, W. Cork; near Barony Bridge, Glengariff; J. E. Lousley and R. C. L. Burges.

*553/2. Pinguicula vulgaris L. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 339), but place in brackets as doubtful: in one locality (Amberley—a well-frequented spot) the record is dated *c.* 1845, another is marked with a "?" and in the third (Henfield Common) the species was planted by Borrer.—Ed.

553/4. Pinguicula lusitanica L. 8, S. Wilts.; Landford Common, J. D. Grose. 45, Pembroke; Trerhos Bog, Hayscastle, E. C. Howells, comm. Dept. Bot., Nat. Mus. Wales.

67(2). **Pedaliaceae** Lindl., *Nat. Syst.*, ed. 2, 281 (1836).

†553(2). **Martynia** L., *Gen. Pl.*, ed. 5, 270 (1754).

†553(2)/1. **Martynia Louisiana** Mill., *Gard. Dict.*, ed. 8, No. 3 (1768). (*M. proboscidea* Geor.). A native of the Minnesota valley, called "Unicorn plant" or "Elephant's Trunk" on account of its trunk-like fruit. 39, Staffs.; Messrs Peach & Co.'s maltings, Burton-on-Trent, R. C. L. Burges, det. P. Aellen.

†554/1. Acanthus mollis L. 3, S. Devon; cliff at Kingswear, garden escape, E. M. Phillips.

558. Mentha L. determined by A. L. Still.

558/1. Mentha rotundifolia L. 11, S. Hants.; near Lovedean, P. M. Hall.

558/1c. Mentha rotundifolia (L.) Huds., var. elongata Pér. 45, Pembroke; near Manorbier Castle, J. D. Grose.

558/1×4. ×Mentha cordifolia (Opiz) Fraser. 3, S. Devon; potteries by Heathfield Station, F. M. Day and G. T. Fraser.

558/2. Mentha alopecuroides Hull. Add to *C.F.* 14, E. Sussex (W.-Dod; 1937. 341): see *J.B.*, 49 (1906), for previous record.

558/3. Mentha longifolia (L.) Huds. 34, W. Gloster; Leadington, near Dymock: 37, Worcs.; Barnard's Green, Malvern, F. M. Day.

558/3 var. MENTHA LONGIFOLIA (L.) Huds., var. VILLOSA Huds. 33, E. Gloster; Little Barrington, F. M. DAY.

*†558/4. MENTHA SPICATA L., em. Huds. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 341). 23, Oxon.; waste ground, Oxford, J. P. M. BRENAN and J. F. G. CHAPPLE. *†33, E. Gloster; Eastington: †36, Hereford; Evendine, Colwall, F. M. DAY.

†558/6a. ×MENTHA PIPERITA L., var. OFFICINALIS Sole. 34, W. Gloster; Bromsberrow, F. M. DAY.

†558/6d. ×MENTHA PIPERITA L., var. SUBCORDATA Fraser. 33, E. Gloster; Compton Abdale: Little Barrington: Fosse Bridge, Chedworth, F. M. DAY. 41, Glamorgan; Coity Green, Llangennith, Gower (lusus *pilosus*, the hairy form, rare in the wild state), A. L. STILL.

*†558/6f. MENTHA PIPERITA L., var. SYLVESTRIS Sole [=558/8. ×M. HIRCINA (Hull)]. 14, E. Sussex; near Danehill, A. L. STILL, *B.E.C. 1936 Rep.*, 409 (1937).

558/7×3. ×MENTHA PALUSTRIS Sole. 9, Dorset; East Fleet, Miss D. MEGGISON, comm. Miss C. M. ROB.

558/9. ×MENTHA VERTICILLATA L. 45, Pembroke; Orielton: Broadhaven, J. F. G. CHAPPLE.

558/9e. ×MENTHA VERTICILLATA L., var. OVALIFOLIA (Opiz) Briq. 34, W. Gloster; Bromsberrow, F. M. DAY.

558/9q. ×MENTHA VERTICILLATA L., var. RIVALIS Briq. 11, S. Hants.; Buckler's Hard, Lady DAVY and J. F. G. CHAPPLE.

558/10. ×MENTHA GENTILIS L. 3, S. Devon; Compton, Marldon: Chudleigh Knighton; F. M. DAY: "both plants unusual, having slightly hairy pedicels and calyces."—A. L. S. 3, S. Devon; Bonehill Down, Widecombe, G. T. FRASER, F. M. DAY and T. STEPHENSON (not det. A.L.S.). *13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 344). †23, Oxon.; waste ground, Oxford, J. P. M. BRENAN and J. F. G. CHAPPLE.

558/10j. ×MENTHA GENTILIS L., var. VESANA Lej. & Court. 23, Oxon.; roadside near Goring, H. J. RIDDELSDELL.

†558/11. ×MENTHA CARDIACA Baker. 23, Oxon.; waste ground, Oxford, J. P. M. BRENAN and J. F. G. CHAPPLE.

*558/12. MENTHA RUBRA Sm. 13, W. Sussex (W.-Dod; 1937, 343).

558/12d. ×MENTHA RUBRA Sm., var. RARIPILA Briq. 36, Hereford; Wellington Heath, F. M. DAY.

558/13c. Mentha aquatica L., var. austriaca (Jacq.) Briq. 11, S. Hants.; Hatchett's Pond, Lady Davy and J. F. G. Chapple.

558/13×1. Mentha Muelleriana F. Schultz, var. serratifolia Pugsl. 3, S. Devon; in view of the danger to which this plant is exposed in its original station at Salcombe, cultivated material has been planted at Scabbacombe Bay by Mr G. T. Fraser [and produced ten good flowering spikes in September.—G.T.F.].—A. L. Still (*J.B.*, *75*, 23).

558/14b. Mentha Pulegium L., var. erecta Martyn. 11, S. Hants.; Forest View, near Lyndhurst, Lady Davy and J. F. G. Chapple.

559/1. Lycopus europaeus L. 68, Cheviotland; on the Bowmont Water at its junction with the College burn, J. E. Hull (*Vasc.*, *23*, No. 3, 118).

*561/1. Thymus Pulegioides L. 7, N. Wilts.; Conkwell, Grose (1937; 88).

561/5. Thymus Serpyllum L., var. pycnotrichus (Uechtr.) Ronn. 3, S. Devon; Dawlish Warren, 1936, G. T. Fraser, det. K. Ronniger.

561/10. Thymus neglectus Ronn. 3, S. Devon; Dawlish Warren, 1936, G. T. Fraser, det. K. Ronniger. 34, W. Gloster; Bromsberrow: *37, Worcs.; Old Hills, Powick; F. M. Day, det. Kew.

561/11. Thymus britannicus Ronn. 3, S. Devon; Dawlish Warren, 1936: Churston Ferrers, 1936; G. T. Fraser, det. K. Ronniger. [From comparison with the specimens identified by Dr Ronniger I believe this to be a common S. Devon form: I have noted it from Brixham, Kingskerswell, Torquay, Torbryan, Ipplepen, Stokenham and South Brent, all in v.-c. 3. Dr Ronniger also determined *T. britannicus* × *T. Chamaedrys*, from Dawlish Warren, 1936, but I have so far failed to find *T. Chamaedrys* there.—G.T.F.] *13, W. Sussex (W.-Dod; 1937, 347).

*562/7. Calamintha Nepeta (L.) Savi. 13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 348).

562/8. Calamintha Acinos (L.) Clairv. 4, N. Devon; quarries, South Tawton: Bridestowe; W. Keble Martin and G. T. Fraser.

†565/1. Melissa officinalis L. Add to *C.F.* 14, E. Sussex (W.-Dod; 1937, 349), see *J.B.*, 416 (1901), for previous record.

566/1. Salvia pratensis L. 8. S. Wilts.; several large clumps on the downs near West Lavington, Gullick (1937; 83). [Add to *C.F.*; for previous record see *B.E.C. 1925 Rep.*, 890 (1926).—Ed.] †16, W. Kent; in a very rough field near Greenstreet Green about a mile from the locality recorded in *B.E.C. 1936 Rep.*, 274 (1937), J. E. Lousley and H. W. Mansfield.

†566/12. Salvia sylvestris L. 39, Staffs.; Burton-on-Trent, R. C. L. Burges, det. P. Aellen as ×*S. elata* Host = *S. pratensis* L. × *sylvestris* L. [According to Hegi *S. elata* Host is synonymous with *S. sylvestris* L., which = *S. nemorosa* L. × *pratensis* L. See note on this hybrid in *B.E.C. 1932 Rep.*, 349 (1933).—N. Y. Sandwith.]

569/1. Nepeta Cataria L. 7, N. Wilts.; near Biddestone, Grose (1937; 88).

†570/3. Dracocephalum parviflorum Nutt. 56, Notts.; bank of Lenton Canal, R. Bulley, det. Kew.

572/2. Scutellaria minor Huds. 97, Westerness; seashore at Arisaig, 1936, with *Anagallis tenella* Murr.: see record for Invermoidart in same v.-c., *J.B.*, 1903, 274, where it is said to be very scarce in Scotland; E. C. Wallace.

*†573/2. Prunella laciniata L. 12, N. Hants.; near Shipton Bellinger, J. D. Grose, P. M. Hall and E. C. Wallace. [In *B.E.C. 1935 Rep.*, 38 (1936), this locality was incorrectly recorded as in 8, S. Wilts: the locality is very close to the county boundary and the plant was not seen on the Wiltshire side: distributed from this locality, see p. 664.—Ed.] †Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 352): see *J.B.*, 91 (1909), for previous record. †20, Herts.; near Berkhamsted, meadow on chalky soil, 1936, slightly increased in 1937, Miss M. Hoare, comm. A. J. Wilmott.

†579/1. Leonurus Cardiaca L. 45, Pembroke; roadside, Herbrandston, J. F. G. Chapple.

†581/2. Lamium maculatum L. 4, N. Devon; Okehampton Castle, E. M. Phillips.

581/4b. Lamium hybridum Vill., var. decipiens Rouy. 23, Oxon.; waste ground, Marston, J. F. G. Chapple, det. C. E. Britton.

581/4c. Lamium hybridum Vill., var. dissectum Mutel. 23, Oxon.; waste ground, Marston, J. F. G. Chapple, det. C. E. Britton.

†581/7. Lamium garganicum L. 69, Westmorland; outside an abandoned farm near Haweswater, Mrs Pemberton-Pigott, det. J. F. G. Chapple and A. J. Wilmott.

588/3e. Plantago Coronopus L., var. pygmaea Lange. 3, S. Devon; Berry Head, Brixham, G. T. Fraser.

588/10b. Plantago major L., var. intermedia (Gilib.) Syme. 15, E. Kent; by pool on Denge Beach, 1936, J. E. Lousley and E. C. Wallace.

589/1. Littorella uniflora (L.) Aschers. 63, S.W. Yorks.; near Penistone, P. H. Cooke. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

†596/6. Amaranthus retroflexus L. 26, W. Suffolk; plentiful in carrot-field, Risby, J. E. Lousley.

†596/9. Amaranthus albus L. 26, W. Suffolk; plentiful in carrot-field, Risby, J. E. Lousley.

†596/12. Amaranthus deflexus L. 3, S. Devon; Bee Sands, Stokenham, G. T. Fraser, det. Kew.

600/1. Chenopodium rubrum L. 8, S. Wilts.; farmyard, Boyton: manure-heap, Alderbury: farmyard, Britford, abundant; not given for the Salisbury district by Preston, *Flora of Wilts.*—Gullick (1937; 83).

600/3. Chenopodium Bonus-Henricus L. 43, Radnor; New Radnor, J. F. G. Chapple and N. D. Simpson.

*600/4. Chenopodium hybridum L. 14, E. Sussex (W.-Dod; 1937, 369). †19, N. Essex; laneside near Colchester, E. C. Wallace.

†600/6. Chenopodium murale L. 3, S. Devon; The Quay, Exmouth, F. M. Day. *†8, S. Wilts.; abundant among potatoes at Salisbury, 1933, and at Steeple Langford, 1935, but it has not persisted; according to Preston, *Flora of Wilts.*, this species required verification for the county.—Gullick (1937; 83). *†26, W. Suffolk; near Risby, J. E. Lousley.

*†600/7. Chenopodium opulifolium Schrad. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 368). †17, Surrey; Collier's Wood, Tooting, J. E. Woodhead, det. and comm. J. E. Lousley, confirmed by P. Aellen. †19, N. Essex; Electric Power Station, Colchester, 28th August 1927, G. C. Brown [Ref. No. 2149, distributed as "*C. album* L., var."]; specimen in Herb. Lousley determined by P. Aellen.

*†600/12. Chenopodium ficifolium Sm. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser. †14, E. Sussex; arable field, Groombridge, E. C. Wallace. †16, W. Kent; Greenstreet Green, near Farnborough, J. E. Lousley. *†54, N. Lincs.; potato field near Frieston, E. C. Wallace.

*600/13. Chenopodium glaucum L. 14, E. Sussex (W.-Dod; 1937, 370).

600/15. Chenopodium polyspermum L. 7, N. Wilts.; Christian Malford: Devizes.—Grose (1937; 88).

†600/21. Chenopodium hircinum Schrad. 41, Glamorgan; Splott, Cardiff, R. L. Smith and F. Norton.

†600/24. Chenopodium Berlandieri Moq., subsp. Zschackei (Murr.) Zobel, var. typicum Aell. 17, Surrey, gravel-pit behind Dowding's Castle, Tadworth, 1929, J. E. Lousley, det. P. Aellen.

†606/3e. Atriplex patula L., var. bracteata Westerl. 23, Oxon.; waste ground, Oxford, J. P. M. Brenan and J. F. G. Chapple, det. A. J. Wilmott.

†606/10. Atriplex hortensis L. 3, S. Devon; Chagford, G. T. Fraser and N. A. Haywood, det. A. J. Wilmott.

606/17. Atriplex portulacoides L. 45, Pembroke; Broadhaven Bay, J. F. G. Chapple.

†607/1. Axyris amarantoides L. 6, N. Somerset; allotment near Weston-super-Mare Station, 1936, Sandwith (1937; 179).

*611/7. Salicornia gracillima (Towns.) Moss. 41, Glamorgan; Aberthaw, Miss E. Vachell, det. A. J. Wilmott.

612/1. Suaeda fruticosa (L.) Forsk. Bracket 13, W. Sussex in *C.F.* and delete 14, E. Sussex (W.-Dod; 1937, 378, 560): there are no records cited for E. Sussex and the W. Sussex records are errors except in one case where the species appears to have been planted.—Ed.

613/1. Salsola Kali L. 45, Pembroke; Broadhaven Bay, J. F. G. Chapple.

*615/1. Polygonum dumetorum L. 13, W. Sussex (W.-Dod; 1937, 379).

615/3. Polygonum Bistorta L. 3, S. Devon; Totnes, E. M. Phillips: Dartington, G. T. Fraser. 8, S. Wilts.; water-meadow between West Harnham and Salisbury, Gullick (1937; 83). Add to *C.F.* 13, W. Sussex and 14, E. Sussex (W.-Dod; 1937, 383): for previous records see *J.B.*, 92 (1909), and *J.B.*, 51 (1906), respectively.—Ed. 69, N. Lancs.; Coniston and Coniston Water, Mrs R. A. L. Cole, comm. L. A. W. Burder.

615/4. Polygonum viviparum L. Delete 67, S. Northumberland, from *C.F.*, Temperley (1937 A, 12).

615/7c. Polygonum Persicaria L., var. ruderale Meisn. 7, N. Wilts.; Swindon, J. D. Grose.

615/7h. Polygonum Persicaria L., var. prostratum Bréb. 3, S. Devon; Slapton, G. T. Fraser, det. C. E. Britton.

615/8. Polygonum nodosum Pers. 3, S. Devon; Exminster, G. T. Fraser, det. C. E. Britton.

*615/10. Polygonum mite Schrank. 14, E. Sussex (W.-Dod; 1937, 382).

*615/11. Polygonum minus Huds. 13, W. Sussex (W.-Dod; 1937, 381-2).

615/12. Polygonum maritimum L. For 14, E. Sussex in *C.F.* read 13, W. Sussex, and retain brackets as doubtful (W.-Dod; 1937, 381).

†615/32. Polygonum cuspidatum Sieb. & Zucc. 14, E. Sussex; Newhaven, well established and in some quantity, L. A. W. Burder, det. Kew.

†615/33. Polygonum sachalinense Schmidt. 3, S. Devon; Plymouth Hoe, E. M. Phillips.

†615/34. Polygonum compactum Hook. f. 41, Glamorgan; waste ground, Cathays Park, Cardiff, established for over ten years, A. E. Wade, R. L. Smith and Miss E. Vachell, comm. Dept. Bot., Nat. Mus. Wales.

†616/2. Fagopyrum tataricum (L.) Gaertn. 3, S. Devon; waste ground, Wolborough, G. T. Fraser.

*618/1. Rumex Hydrolapathum L. 67, S. Northumberland; bog south of Cambo: Rothley Lake; R. B. Cooke and J. W. Heslop Harrison (*Vasc.*, *23*, No. 4, 158). [Mr G. W. Temperley tells me that he has known this species at Rothley Lake since 1904, but I cannot find that a previous record has been published.—Ed.]

618/2. Rumex longifolius DC. Delete 68, Cheviotland, from *C.F.*, Temperley (1937 A, 10).

618/2×6. Rumex longifolius DC. × obtusifolius L. (not necessarily ×*R. Arnottii* Druce). 88, Mid Perth; Fortingall, R. Mackechnie and E. C. Wallace.

†618/5. Rumex alpinus L. 70, Cumberland; still at the old localities, Ulcat Row, Mottesdale and Mossdike Farm, Mungrisdale, J. E. Lousley.

618/6×11. Rumex obtusifolius L. × pulcher L. 34, W. Gloster; Alney Island with both parents, J. E. Lousley.

618/9×13. Rumex conglomeratus Murr. × maritimus L. =× R. Knafii Celak. 34, W. Gloster; pond, Hill, with both parents, 1936, E. Nelmes (Sandwith; 1937, 178).

618/10. Rumex rupestris Le Gall. Delete 13, W. Sussex in *C.F.* and add *14, E. Sussex in brackets as doubtful (W.-Dod; 1937, 385).

*618/12. Rumex palustris Sm. 66, Durham; Billingham Marshes, J. W. Heslop Harrison (*Vasc.*, *23*, No. 3, 117).

618/13. Rumex maritimus L. 17, Surrey; near Godstone, D. B. Fanshawe. 37, Worcs.; Westwood Great Pool, near Droitwich, J. E. Lousley and R. C. L. Burges.

†618/22. Rumex dentatus (L.) Campd. 61, S.E. Yorks.; King George Dock, Hull, A. K. Wilson, Miss C. M. Rob and W. A. Sledge.

*†622/1. Aristolochia Clematitis L. 41, Glamorgan; Newton, Porthcawl, Mr Bryant, comm. Miss E. Vachell: Barry Dock, Mrs C. I. Sandwith.

623/1. Daphne Laureola L. 49, Caernarvon; near Llanfairfechan: 50, Denbigh; S. of Glan Conway; F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

*†625/1. Hippophae Rhamnoides L. 13, W. Sussex (W.-Dod; 1937, 392). *†49, Caernarvon; a thicket of it on the coast E. of Aber, F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

628/4. Euphorbia pilosa L. Delete from *C.F.* " planted in 14 ": this note refers to *E. coralloides* L. (*E. pilosa* Hook. non L.), which occurs as an alien in W. and E. Sussex (W.-Dod; 1937, 395).

*†628/6. Euphorbia stricta L. 13, W. Sussex, garden escape, and 14, E. Sussex, error (W.-Dod; 1937, 395).

628/8. Euphorbia amygdaloides L. Read 67, S. Northumberland for 68, Cheviotland, in *C.F.*, Temperley (1937 A, 10).

†628/10. Euphorbia Esula L. Add to *C.F.* 13, W. Sussex, and 14, E. Sussex (W.-Dod; 1937, 397): for previous records see *J.B.*, 51 (1906), but it is likely that there has been confusion with forms of *E. virgata* Waldst. & Kit.—Ed.

†628/11. Euphorbia Cyparissias L. 8, S. Wilts.; Larkhill Ranges, Gullick (1937; 83). †Add to *C.F.* 14, E. Sussex (W.-Dod; 1937, 397): see *J.B.*, 93 (1909), for previous record. *†63, S.W. Yorks.; Rockley, near Falthwaite, E. G. Bayford, comm. A. A. Dallman (*N.W. Nat.*, *12*, No. 4, 407).

*628/12. Euphorbia Paralias L. 14, E. Sussex (W.-Dod; 1937, 397).

628/16. Euphorbia Lathyris L. L. 8, S. Wilts.; very abundant (2 or 3 acres of fine plants) and appearing native in a newly coppiced part of Clarendon Wood, where it was " very plentiful " in 1867 (*Wilts. A.M.*, *12*, 346 (1870)), Gullick (1937; 83). [Add to *C.F.*—Ed.] †Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 398): see *J.B.*, 93 (1909), for previous record. *†14, E. Sussex (W.-Dod; *loc. cit.*).

*†631/1. Buxus sempervirens L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 399).

†632/2. Mercurialis annua L. 3, S. Devon; Newton Abbot tip, Wolborough, A. Crawshaw and T. Stephenson. 7, N. Wilts.; Wroughton: Swindon: Inglesham: Seagry: Colerne: abundant in Highworth; apparently an increasing species.—Grose (1937; 88).

633/2. Ulmus nitens Moench. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 400): see *B.E.C. 1916 Rep.*, 512 (1917), for previous record. *14, E. Sussex (W.-Dod; 1937, 401).

†635/1. Cannabis sativa L. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser.

637/1e. Urtica dioica L., var. horrida Rouy. 2, E. Cornwall; cliffs, Polperro, Miss E. S. Todd.

641/1. Myrica Gale L. 8, S. Wilts.; a few bushes just inside the county boundary, Plaitford; bracketed as doubtful in Preston, *Flora of Wilts.* [but given in *C.F.*—Ed.], Gullick, (1937; 83).

†641/2. **Myrica caroliniensis** Mill. 12, N. Hants.; marshy wood between Fleet and Crookham, G. A. R. Watts; det. A. J. Wilmott, who says that this is the same plant as that from S. Hants recorded as *M. cerifera* L. in *B.E.C. 1936 Rep.*, 278 (1937), and is sometimes considered to be a variety of *M. cerifera*.

*642/2. Betula pubescens Ehrh. 14, E. Sussex (W.-Dod; 1937, 404).

†643/2. Alnus incana Medik. 62, N.E. Yorks.; Beckhole, near Goathland, H. Britten, comm. W. A. Sledge.

645/1b. Corylus Avellana L., var. laciniata Petz. & Kirch. 36, Hereford; Mitcheldean Road, The Lea, H. M. Hallett, comm. Dept. Bot., Nat. Mus. Wales.

*†647/1. Castanea sativa Mill. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 407).

650/3×2. Salix alba L. × fragilis L. = × S. viridis Fr., *sens. lat.*, ♀. 34, W. Gloster; streamside below Ashley Hill, 1936, C. Sandwith, confirmed by Dr B. Floderus. Certain trees with male catkins, many of which are curiously forked, occurring in several localities in 6, N. Somerset (Keynsham: Pensford: Brent Knoll: Berrow) are apparently to be referred to the forma *monstrosa* of the male condition of this hybrid.—Sandwith; 1937, 178.

650/9×8. Salix aurita L. × Caprea L. 7, N. Wilts.; Coped Hall: Minety.—Grose (1937; 88).

*†651/1. Populus canescens Sm. Alderney; Val du Sud, 1933, Jackson, Jackson, and Airy-Shaw (1937 A, 299).

†651/4×3. Populus italica Moench × nigra L. 6, N. Somerset; between Keynsham and Saltford, trees bearing female catkins and with the branches slightly more spreading than those of the Lombardy Poplar, 1936, C. Sandwith and J. P. M. Brenan (Sandwith; 1937, 179).

†651/11. **Populus trichocarpa** Torr. & Gray ex Hook., *Ic. Pl.*, t. 878 (1852). California. 32, Northants; roadside, Silverstone, J. F. G. Chapple and R. Melville.

652/1. Empetrum nigrum L. 4, N. Devon; Okement Hill, Lydford, W. Keble Martin and G. T. Fraser. [Confirmation of an old record: the locality, in which the plant is confined to a limited area at 1800-1850 feet, is on the Artillery Range: shell-bursts often cause fires but we noticed that this species was one of the first to restart growth on the burnt patches.—G.T.F.]

*653/1. Ceratophyllum submersum L. 14, E. Sussex (W.-Dod; 1937, 419).

654/1. Hydrocharis Morsus-ranae L. Add to *C.F.* 67, S. Northumberland, extinct, Temperley (1937 A, 12).

†656/1. Elodea canadensis Michx. 3, S. Devon; ditches at Otterton Bridge and Totnes, G. T. Fraser. †70, Cumberland; Thurstonfield Loch, R. W. Butcher.

668/1. Epipactis palustris (Mill.) Crantz. 7, N. Wilts.; Tockenham, 1932: the meadow has since been drained and the plant seems to have disappeared.—Grose (1937; 88).

668/3. Epipactis leptochila Godfery. 3, S. Devon; Dunsford, E. Cahen, comm. G. T. Fraser, det. T. Stephenson. *13, W. Sussex (W.-Dod; 1937, 424). Bracket 14, E. Sussex, recorded in *B.E.C. 1933 Rep.*, 543 (1934), doubtful (W.-Dod; *loc. cit.*).

*668/4. Epipactis purpurata Sm. 13, W. Sussex (W.-Dod; 1937, 424).

668/5. Epipactis atropurpurea Rafn. Delete from *C.F.* 13, W. Sussex: there is no reference in W.-Dod (1937) to any Sussex record of this species.—Ed.

669/1. Orchis purpurea Huds. Delete brackets in *C.F.* from 13, W. Sussex and 14, E. Sussex (W.-Dod; 1937, 427).

669/7. Orchis latifolia L. 3, S. Devon; Heathfield, Bovey Tracey, A. Crawshaw and T. Stephenson. Add to *C.F.* 13, W. Sussex (W.-

Dod; 1937, 430, as *O. incarnata* L.): see Arnold, *Fl. Sussex* (1887), for previous record. H.3, W. Cork; S. of Baltimore: H.16, W. Galway, near Recess (a purple-flowered form): H.20, Wicklow; near Newcastle Station, J. E. Lousley and R. C. L. Burges, det. P. M. Hall. H.15, S.E. Galway; Raford, near Athenry: H.27, W. Mayo; Lough Conn, Mrs Gough, det. and comm. P. M. Hall.

669/7c. Orchis latifolia L., var. pulchella (Druce) Pugsl. 3, S. Devon; Axmouth, Sir M. Abbot Anderson, det. T. Stephenson.

669/7d. Orchis latifolia L., var. coccinea Pugsl. H.20, Wicklow; Brittas Bay: H.21, Dublin; N. Bull (not seen by P.M.H.): H.28, Sligo; Rosses Point, J. E. Lousley and R. C. L. Burges, det. P. M. Hall.

669/7×9. Orchis latifolia L. × purpurella T. & T. A. Stephenson. 52, Anglesey; Cors Bodeilio, J. F. G. Chapple, det. P. M. Hall: S.W. of Llyn Cadarn and W. of Pen-y-Cefn, both near Llanbedrgôch: Newborough Warren: Wern, Red Wharf Bay, E. Milne-Redhead.

669/7×10. Orchis latifolia L. × maculata L. 52, Anglesey; Cors Goch and Cors Bodeilio, J. F. G. Chapple, det. P. M. Hall: Cors Bodeilio: Newborough Warren: Wern, Red Wharf Bay, E. Milne-Redhead.

669/7c×10. Orchis latifolia L., var. pulchella (Druce) Pugsl. × maculata L. 62, N.E. Yorks.; Fen Bog, H. Britten, comm. W. A. Sledge.

669/8. Orchis praetermissa Druce. 61, S.E. Yorks.; Bromfleet "delphs." A. K. Wilson, det. V. S. Summerhayes at Kew. 62, N.E. Yorks.; Helwath Beck, H. Britten, comm. W. A. Sledge.

669/8×11. Orchis praetermissa Druce × Fuchsii Druce =× O. Mortonii Druce. 62, N.E. Yorks.; Helwath Beck, H. Britten, comm. W. A. Sledge.

*669/9. Orchis purpurella T. & T. A. Stephenson. 40, Salop; marsh *c.* 1000 ft. near Stiperstones (Shelve district), "no other varieties growing with it," H. H. Hughes, det. and comm. A. J. Wilmott. 52, Anglesey; this species was seen in at least 12 separate localities by Messrs J. F. G. Chapple and E. Milne-Redhead during the Excursion in June 1937. A very large form at Llanfawr Quarry (where no other species was seen) resembled var. *crassifolia* T. Stephenson in *B.E.C. 1936 Rep.*, 356 (1937). Mr Milne-Redhead collected a pink-flowered form at Llandona: this is of interest in connection with my remarks in *B.E.C. 1936 Rep.*, 348 (1937).—P. M. Hall. *62, N.E. Yorks.; Saltersgate, H. Britten, comm. W. A. Sledge. 88, Mid Perth; Litigan, near Coshieville, P. M. Hall and W. A. Sledge. 108, W. Sutherland, Island of Handa, J. W. & H. Heslop Harrison (1937; 7). [Stated in error to be N.C.R.: see *B.E.C. 1936 Rep.*, 280 (1937), for previous record.—Ed.]

669/9. Orchis purpurella T. & T. A. Stephenson. Specimens in Herb. Mus. Brit. from the following localities have been determined by Mr A. J. Wilmott: —

*72, Dumfries; Garble Burn, Beattock, 1894, E. F. Linton, as "*O. latifolia.*"

*73, Kirkcudbright; Barcaple Moor, 1883, F. R. Coles, as *O. latifolia.*

*74, Wigtown; Portpatrick, M. S. Campbell and A. J. Wilmott (and hybrids with *O. Fuchsii* Druce).

*81, Berwick; North Berwick, 1910, I. M. Hayward (in Herb. E. S. Gregory as *O. latifolia*).

*86, Stirling; near Stirling, 1873, J. M. Duthie, as *O. latifolia.*

88, Mid Perth; Lawers: 1898, H. J. Riddelsdell; 1925, J. Lid.

89, E. Perth; Borland, near Kirkmichael, 1936, A. J. Wilmott (var. *pulchella* (Druce) Pugsl., also hybrids with *O. elodes*).

*90, Angus; Restennet, 1882, G. C. Druce, as *O. latifolia*: Rescobie Loch, 1924, A. J. Wilmott.

92, S. Aberdeen; Strath Don, east of Corgarff, 1936, A. J. Wilmott.

*96, Easterness; near Aviemore, 1922, C. E. Salmon, as *O. praetermissa.*

*98, Argyll; Strona, Moidart, S. M. MacVicar, as *O. majalis* (in Herb. Ar. Bennett).

*103, Mid Ebudes; Mull, Heatherfield, 1876, G. Ross, as *O. latifolia* (possibly a hybrid with *O. elodes*, but *O. purpurella* certainly present).

104, Skye; Broadford, a form with peculiar short broad labellum with sides sharply dentate and middle lobe shorter and broad: near Sligachan, probably var. *pulchella* (Druce) Pugsl.: near Earlish, rich purple, leaves more or less spotted; all 1936, A. J. Wilmott.

*105, W. Ross; above Loch Droma, a small rather lax-flowered form: Ullapool, typical; both 1935, A. J. Wilmott. Cluanie, meadow by the inn (leaves usually unspotted, sometimes with spots): Torridon, Alligin Shuas: Diabaig (cf. var. *pulchella* (Druce) Pugsl.); all 1936, A. J. Wilmott.

106, E. Ross; coast near Rockfield, 1890, E. S. Marshall, as *O. latifolia*: above L. Ussie, A. J. Wilmott (var. *pulchella* (Druce) Pugsl. and hybrids with *O. elodes*).

108, W. Sutherland; Elphin (var. *pulchella* (Druce) Pugsl.), 1935, A. J. Wilmott.

109, Caithness; near Bilbster, 1900, E. S. Marshall [No. 2458], as *O. latifolia*, var. *brevifolia* Reichb. fil.: Thurso, 1902, H. J. Riddelsdell, as *O. praetermissa* (det. A.J.W., var. *pulchella* (Druce) Pugsl.): Reay, 1902, H. J. Riddelsdell; 1935, A. J. Wilmott.

111, Orkney; near Stromness, 1900, E. S. Marshall, both as *O. latifolia* and *O. incarnata*.

112, Shetland; Bressa, 1865, R. Tate, as *O. mascula*.

*H.7, S. Tipperary; near Newcastle, 1882, J. Britten and G. Nicholson, as *O. latifolia*.

H.12, Wexford; N. of Wexford Harbour, 1896, E. S. Marshall [No. 1663], as *O.* "*latifolia*": near Rosslare Strand, 1934, A. J. Wilmott.

669/9(2). Orchis majalis Reichb., subsp. occidentalis (Pugsl.) Pugsl. H.3, W. Cork; Goleen: H.16, W. Galway; Ballyconeely, near Bunowen; J. E. Lousley and R. C. L. Burges, det. P. M. Hall.

669/9(2)×10. Orchis majalis Reichb., subsp. occidentalis (Pugsl.) Pugsl. × maculata L. H.27, W. Mayo; near Mullaranny, J. E. Lousley and R. C. L. Burges.

669/10×8. Orchis maculata L. × praetermissa Druce = × *O.* Hallii Druce. 61, S.E. Yorks.; Bromfleet "delphs," A. K. Wilson, det. V. S. Summerhayes at Kew.

669/10×9. Orchis maculata L. × purpurella T. & T. A. Stephenson. 52, Anglesey; Red Wharf Bay, J. F. G. Chapple, det. P. M. Hall: Newborough Warren: Llandona; E. Milne-Redhead.

669/10×674/1. Orchis maculata L. × Gymnadenia conopsea (L.) R. Br. 52, Anglesey; Wern, Red Wharf Bay, E. Milne-Redhead.

*669/11. Orchis Fuchsii Druce. 72, Dumfries; near Glencrosh, A. J. Wilmott: Moffatdale, near Capelburn, 1907, E. S. Marshall, det. A.J.W. 74, Wigtown; Portpatrick, A.J.W. [add to *C.F.*, see *B.E.C. 1924 Rep.*, 597 (1925), for previous record.—Ed.]. *75, Ayr; near Woodland, A.J.W. 88, Mid Perth; near Kinloch Rannoch, 1922, K. H. Wright, det. A.J.W.

669/11×7. Orchis Fuchsii Druce × latifolia L. 52, Anglesey; Cors Bodeilio: Llanfihangel-Ty'n-Sylwy; E. Milne-Redhead.

669/11×9. Orchis Fuchsii Druce × purpurella T. & T. A. Stephenson. 52, Anglesey; Red Wharf Bay, J. F. G. Chapple, det. P. M. Hall: Llanfihangel-Ty'n-Sylwy, E. Milne-Redhead. 88, Mid Perth; Litigan, near Coshieville, P. M. Hall and W. A. Sledge.

669/11×10. Orchis Fuchsii Druce × maculata L. 52, Anglesey; S.W. of Llyn Cadarn, near Llanbedr-gôch, E. Milne-Redhead. 62, N.E. Yorks.; Saltersgate, H. Britten, comm. W. A. Sledge.

669/14×5. Orchis mascula L. × Morio L. 62, N.E. Yorks.; Upgang, H. Britten, comm. W. A. Sledge.

*669/18. Himantoglossum hircinum (L.) Koch. 4, N. Devon; near Braunton, about 14 plants, Dr D. Munro Smith, comm. F. R. Elliston Wright. 22, Berks.; 5 plants at Letcombe Bassett, where one was found in 1936, Mrs E. C. Barnes. 24, Bucks.; 4 plants in the locality at Wendover where one was observed in 1934 (see *B.E.C. 1936 Rep.*, 280 (1937)).—J. F. G. Chapple.

*672/2. Ophrys sphegodes Mill. 13, W. Sussex (W.-Dod; 1937, 431).

672/3. Ophrys apifera Huds. 33, E. Gloster; Andoversford: in 1936 a white-flowered specimen appeared, the position of which was carefully marked: in 1937 there was no sign of this plant, but 5-6 yards away a group of 4 plants appeared, about 2 inches apart from one another, three normal and one white-flowered; Miss L. Abell.

*674/3. Gymnadenia albida (L.) Rich. 13, W. Sussex (W.-Dod; 1937, 434).

674/3×1. Gymnadenia albida (L.) Rich. × conopsea (L.) R. Br. = × Schweinfurthii Heg. 62, N.E. Yorks.; Saltersgate, H. Britten, comm. W. A. Sledge.

†678/1. Crocus nudiflorus Sm. For 14, E. Sussex in *C.F.* read 13, W. Sussex (W.-Dod; 1937, 437).

†678/2. Crocus vernus (L.) All. 27, E. Norfolk; Harleston: the field in which this species has long been known to grow has now been enclosed and utilised as a poultry and pig run: a few flowers were seen and photographed on March 27th, 1937, but it is unlikely that the plant will survive its present treatment: Syme describes the locality as near Mendham, but it is only on the Norfolk side of the county boundary.—J. E. Lousley.

*†680/1. Sisyrinchium angustifolium Mill. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 437). †16, W. Kent; Hayes Common, 1934, but not since, D. McClintock. [Add to *C.F.*, but see *B.E.C. 1913 Rep.*, 394 (1914), for previous record.—Ed.]

*†685/1. Galanthus nivalis L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 439).

689/1. Ruscus aculeatus L. 50, Denbigh; two miles S.S.E. of Conway, F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

691/2. Polygonatum multiflorum (L.) All. 3, S. Devon; Sparkwell, E. M. Phillips.

*691/3. Polygonatum officinale All. 13, W. Sussex, status rather doubtful (W.-Dod; 1937, 441).

*694/1. Convallaria majalis L. 13, W. Sussex (W.-Dod; 1937, 441).

702/3. Allium Scorodoprasum L. 69, N. Lancs.; still plentiful near Pool Bridge, J. E. Lousley.

702/4c. Allium vineale L., var. compactum (Thuill.). 5, S. Somerset; Pike's Mill, Allerford, C. Amherst.

702/9. Allium oleraceum L. 3, S. Devon; on a wall at Hookhills, Paignton, F. M. Day. *14, E. Sussex (W.-Dod; 1937, 443).

†704/1. Muscari comosum L. 41, Glamorgan; golf links, The Leys, probably bird-sown, R. L. Smith and F. Norton.

*†707/1. Ornithogalum pyrenaicum L. 14, E. Sussex (W.-Dod; 1937, 445).

707/2. Ornithogalum umbellatum L. 7, N. Wilts.; Tockenham: Brimble Hill, Wroughton: Winterbourne Monkton: Etchilhampton Hill; in each case far from houses.—Grose (1937; 88). †9, Dorset; Handley: 11, S. Hants; Martin; H. J. Goddard. *†14, E. Sussex (W.-Dod; 1937, 444).

†707/3. Ornithogalum nutans L. 8, S. Wilts.; The Close, Salisbury, where it has been increasing for several years, Gullick (1937, 83).

†708/1. Lilium Martagon L. 33, E. Gloster; Downton Wood, near Bourton-on-the-Hill, J. N. Mills. *†41, Glamorgan; Coed Leyshon, P. Wells, comm. Dept. Bot., Nat. Mus. Wales.

*†708/2. Lilium pyrenaicum Gouan. 14, E. Sussex (W.-Dod; 1937, 445).

709/1. Fritillaria Meleagris L. 7, N. Wilts.; the best "Fritillary field" near Minety was treated with a fertilizer in the winter of 1934-5, which resulted in a very poor showing of this species in the following spring: the plants were few in number and averaged only 4-5 inches in height: in 1936 they had regained their normal growth: masses of these flowers are gathered by travelling salesmen and hawked in the streets of Swindon and Cirencester.—Grose (1937; 89).

†710/1. Tulipa sylvestris L. 8, S. Wilts.; Redlynch, hedgebank; this colony, which has been known for many years, flowered in 1933 but immediately the flowers opened they were picked and the bulbs dug up by children.—Gullick (1937; 83). *†13, W. Sussex (W.-Dod; 1937, 445).

711/1. Gagea lutea (L.) Ker-Gawler. 7, N. Wilts.; still at Wexcombe but rarely flowers, Grose (1937; 89). Delete from *C.F.* 14, E. Sussex (W.-Dod; 1937, 445). [W.-Dod makes no reference to any E. Sussex record but accepts a record for W. Sussex (which would be a N.C.R.) on doubtful evidence.—Ed.]

713/1. Colchicum autumnale L. 33, E. Gloster; Guiting Wood, J. N. Mills.

718/4×5. ×Juncus diffusus Hoppe. 20, Herts.; Croxley Moor, near Rickmansworth: 37, Worcs.; Hall Green, near Malvern; F. M. Day.

718/12b. Juncus bulbosus L., var. Kochii (F. Schultz) Druce. 8, S. Wilts.; near Donhead Cliff, J. D. Grose.

718/12d. Juncus bulbosus L., var. uliginosus (Fries) Druce. 8, S. Wilts.; near Park Hill, Longleat, J. D. Grose.

718/14. Juncus compressus Jacq. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 448): see *J.B.*, 52 (1906), for previous record. 61, S.E. Yorks.; Bubwith, Miss C. M. Rob. 64, Mid West Yorks.; Fairburn, W. A. Sledge and G. A. Nelson: Nun Monckton, Miss C. M. Rob.

*718/15. Juncus Gerardi Lois. 64, Mid West Yorks.; near Fairburn, an inland locality, W. A. Sledge and G. A. Nelson.

†718/16. Juncus macer S. F. Gray. 8, S. Wilts.; one plant near Alderbury Junction, 1936, Gullick (1937; 84). W.-Dod (1937; 449) gives a number of localities for this species in 14, E. Sussex, but only one (Hassocks) which may perhaps be in 13, W. Sussex: as this place is on the boundary of the two vice-counties it is better not to show this as a N.C.R.—Ed. *†57, Derby; path in wood near Matlock, Miss E. S. Todd.

*718/19. Juncus capitatus Weig. Alderney; very sparingly on sandy roadsides, Clanque, 1933, Jackson, Jackson and Airy-Shaw (1937, 299).

719/1. Luzula sylvatica (L.) Gaud. 8, S. Wilts.; Marshwood, Dinton: Lower Semley Hill: Batt's Croft, Downton; Gullick (1937; 84).

719/3. Luzula Forsteri (Sm.) DC. 12, N. Hants.; near Fleet, G. A. R. Watts.

†719/9. Luzula albida DC. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 453): see *Science Gossip*, 188 (1889), for previous record.

722/1. Sparganium neglectum Beeby. 3, S. Devon; Mansands, Brixham, F. M. Day and G. T. Fraser. 33, E. Gloster; Upper Slaughter, F. M. Day.

722/2. Sparganium ramosum Huds. 4, N. Devon; Torrington, W. Keble Martin.

723/1. Arum italicum Mill. Delete from *C.F.* 14, E. Sussex: no record is cited by W.-Dod (1937; 456).—Ed. *Alderney; The Terrace, St Annes, 1934, Jackson, Jackson, and Airy-Shaw (1937, 300).

727/2. Lemna polyrhiza L. 8, S. Wilts.; near Lady Down Farm, Trowbridge, J. D. Grose.

727/4. Lemna gibba L. 62, N.E. Yorks.; Sutton-on-Forest, Miss C. M. Rob.

*728/1. Wolffia arrhiza (L.) Wimm. 14, E. Sussex (W.-Dod; 1937, 458).

730/1. Alisma ranunculoides L. In *C.F.*, p. 310, for "44-46" read "44-56."—Ed.

737/3. Potamogeton Drucei Fryer. 22, Berks.; discovered in the R. Thames about 1½ miles below Cookham by Rev. D. M. Heath in 1934 and brought to me for confirmation: at the end of August 1937 in company with Mr J. S. Hughes I saw it growing here in considerable quantity with *P. lucens* L.: although there were numerous flowering spikes, no fruit was observed: this is the first time that it has been recorded from the main River Thames but it is not a new vice-county record, since at this point the whole of the river is included within Berkshire.—J. F. G. Chapple.

737/4. Potamogeton coloratus Hornem. 63, S.W. Yorks.; Potteric Carr, W. A. Sledge.

737/9. Potamogeton gramineus L. Delete from *C.F.* 14, E. Sussex (W.-Dod; 1937, 463). 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

737/13. Potamogeton lucens L. 8, S. Wilts.; Britford, Gullick (1937; 84).

737/16. Potamogeton perfoliatus L. 8, S. Wilts.; R. Nadder, Bemerton to Salisbury: R. Avon, Salisbury to Britford; Gullick (1937; 84).

737/17. Potamogeton crispus L. 8, S. Wilts.; Bishopstone: Clarendon Lake: R. Avon, S.E. of Salisbury; Gullick (1937; 84).

*737/25. Potamogeton pusillus L., non auct. angl. (*P. panormitanus* Biv.-Bernh.) 57, Derby; canal at Cromford, Matlock, Miss E. S. Todd, det. J. E. Dandy. *70, Cumberland; Thurstonfield Loch, R. W. Butcher.

737/28. Potamogeton pectinatus L. 8, S. Wilts.; R. Nadder, Bemerton to Salisbury: R. Avon, Britford; Gullick (1937; 84).

739/1. Zannichellia palustris L. 8, S. Wilts.; River at Boyton: Clarendon Lake; Gullick (1937; 84).

739/2c. Zannichellia pedicellata Fries, var. pedunculata (Reichb.) Pearsall. 3, S. Devon; Bradley Leet, Newton Abbot, G. T. Fraser, det. P. M. Hall. 61, S.E. Yorks.; Kilnsea, near Spurn, R. Good and W. A. Sledge.

*740/2. Zostera nana Roth. 14, E. Sussex (W.-Dod; 1937, 471).

745/1b. Heleocharis palustris (L.) R. Br., var. major Koch.. 33, E. Gloster; Lower Slaughter, F. M. Day.

745/4. Heleocharis acicularis (L.) R. Br. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

746/1. Scirpus sylvaticus L. 8, S. Wilts.; Stourton, Gullick (1937; 84).

746/3. Scirpus lacustris L. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

746/4. Scirpus Tabernaemontani Gmel. 7, N. Wilts.; Greenhill Common, near Purton, J. D. Grose, det. J. Chapple.

746/5. Scirpus triqueter L. Delete from *C.F.* 14, E. Sussex (W.-Dod; 1937, 475).

746/8. Scirpus pauciflorus Lightf. 12, N. Hants.; boggy heathland near Liphook, E. C. Wallace. *14, E. Sussex (W.-Dod; 1937, 472).

746/11. Scirpus setaceus L. 61, S.E. Yorks.; Newbold Springs, A. K. Wilson.

746/12b. Scirpus filiformis Savi, var. monostachys Clarke & Marshall. 45, Pembroke; Dowrog, J. D. Grose.

746/13. Scirpus fluitans L. 8, S. Wilts.; Landford Common, J. D. Grose. 70, Cumberland; Thurstonfield Loch, R. W. Butcher.

747/1. Eriophorum latifolium Hoppe. 12, N. Hants.; very abundant on heaths near Liphook, E. C. Wallace.

749/1. Schoenus nigricans L. 41, Glamorgan; Crumlyn Bog, Swansea, Miss M. Thomas. [Not seen since recorded in *Phyt.*, 1844.—E. Vachell.]

†750/1. Cladium Mariscus (L.) R. Br. Add to *C.F.* 13, W. Sussex, planted (W.-Dod; 1937, 478): see *J.B.*, 419 (1901), for previous record.

753/1. Carex Pseudo-cyperus L. 7, N. Wilts.; Braydon Pond: Okus, Swindon: near Old Park Farm, Wootton Bassett: Hay Lane, Wroughton; J. D. Grose. 37, Worcs.; Pixham, Powick, F. M. Day. 59, S. Lancs.; near Preston, H. E. Bunker.

753/4b. Carex vesicaria L., var. alpigena Fr. 88, Mid Perth; north side of Meall nan Tarmachan, plants exactly like some collected by E. S. Marshall and so named by him from the same locality, R. Mackechnie and E. C. Wallace.

753/8. Carex lasiocarpa Ehrh. 64, Mid West Yorks.; Tarn Moss, Malham, W. A. Sledge and G. A. Nelson. [It is remarkable that this species has not been recorded previously from so well-worked an area. —W.A.S.] *86, Stirling; Dubh Lochan, Rowardennan, R. Mackechnie.

753/9c. Carex hirta L., var. hirtiformis Pers. 3, S. Devon; Dartington, G. T. Fraser, det. E. Nelmes. 34, W. Gloster; Kempley, F. M. Day.

753/9d. Carex hirta L., var. spinosa Mort. 3, S. Devon; Exminster, G. T. Fraser, det. E. Nelmes.

*753/10. Carex pendula Huds. 52, Anglesey; near Plas Newydd, F. Talfourd Jones, comm. Dept. Bot., Nat. Mus. Wales.

753/12. Carex strigosa Huds. 37, Worcs.; Broad Moor Wood, W. H. Hardaker. *62, N.E. Yorks.; Forge Valley, W. A. Sledge, *B.E.C. 1936 Rep.*, 414, 1937.

753/17. Carex distans L. 3, S. Devon; Budleigh Salterton: Exminster; G. T. Fraser. *Alderney; at the foot of Fort Albert, 1934, Jackson, Jackson, and Airy-Shaw (1937, 300).

753/19. Carex Hostiana DC. 4, N. Devon; Molland, R. Taylor, comm. G. T. Fraser. 12, N. Hants.; Weaver's Down, near Liphook: Hazeley Heath; E. C. Wallace. Add 14, E. Sussex to exceptions in *C.F.* (W.-Dod; 1937, 489).

753/20×19. Carex flava L. × Hostiana DC. 12, N. Hants.; boggy heath near Liphook, abundant, E. C. Wallace.

753/21. Carex lepidocarpa Tausch. 3, S. Devon; Axmouth Bog, G. T. Fraser, det. E. Nelmes. Add to *C.F.*, 14, E. Sussex (W.-Dod; 1937, 490): see *J.B.*, 96 (1909), for previous record. *H.15, S.E. Galway; Newtown, Gort, J. E. Lousley and R. C. L. Burges.

753/22. Carex Oederi Retz. Add to *C.F.* 13, W. Sussex and 14, E. Sussex (W.-Dod; 1937, 491): see *J.B.*, 54 (1906), for previous records. *62, N.E. Yorks.; Pilmoor, Mrs Foggitt, Miss C. M. Rob, J. E. Lousley and J. E. Woodhead.

753/22g. Carex Oederi Retz., var. oedocarpa Anderss. 3, S. Devon; Bonehill Down, Widecombe, F. M. Day, det. E. Nelmes. 45, Pembroke; Dowrog Moor, A. E. Wade and H. A. Hyde, comm. Dept. Bot., Nat. Mus. Wales, as *C. flava* L., var. *oedocarpa*, under which name it appears in *B.P.L.*

753/23. Carex extensa Good. 3, S. Devon; Kingsteignton saltmarsh, G. T. Fraser. 52, Anglesey; Porth Dafarch, rocky downs nearly 100 ft. above sea-level, A. L. Still.

753/25. Carex digitata L. 7, N. Wilts.; still at Colerne but in very small quantity, Grose (1937; 89).

753/27. Carex humilis Leysser. 8, S. Wilts.; Lamb Down, Codford: Down N. of Grovely Wood; Gullick (1937; 84).

753/31. Carex tomentosa L. 23, Oxon; wet pasture on Otmoor, J. P. M. Brenan.

*753/34. Carex pallescens L. 61, S.E. Yorks.; Bubwith, Miss C. M. Rob. [This species is not given for v.-c. 61 in Robinson's *Flora*, *C.F.* or *Top. Bot.* and *Supps.*, but was recorded from Beverley some years ago.—W. A. Sledge.]

*753/37. Carex magellanica Lam. (*C. irrigua* (Wahl.) Hoppe). 105, W. Ross; near Achnashellach, G. Taylor and Mrs Sandeman, det. A. J. Wilmott.

753/39. Carex rariflora Sm. 88, Mid Perth; a nice colony on the watershed between Glen Lyon and Rannoch, R. Mackechnie and E. C. Wallace. [Buchanan White, *Flora of Perthshire*, p. 331, cites a record for Meall Odhar, v.-c. 89 (P. Ewing); this station is apparently an outlier of the S. Aberdeenshire localities. It has, however, also been recorded from Lawers, 1899, and again from the extreme north of the county between Dalnaspidal and Dalwhinnie (*J.B.*, 1913, 167).—R.M.]

753/41. Carex atrata L. 88, Mid Perth; on several hills on the north side of Glen Lyon, E. C. Wallace.

753/45. Carex Hudsonii Ar. Benn. 6, N. Somerset; very sparingly in a rhine on Weston-in-Gardano Moor, 1936, C. and N. Sandwith (1937, 179), det. E. Nelmes; the second locality in v.-c. 6.

753/46i. Carex gracilis Curt., var. sphaerocarpa Uechtr. 14, E. Sussex; marsh, Kingston, N. Y. Sandwith, det. E. Nelmes. [W.-Dod (1937; 484) records this var. only from 13, W. Sussex, Bignor.—Ed.]

753/47×49. Carex aquatilis Wahl. × Goodenowii Gay. H.16, W. Galway; above Maam Bridge, with both parents, J. E. Lousley and R. C. L. Burges.

753/49. Carex Goodenowii Gay, forma pumila Kükenth. 3. S. Devon; Bonehill Down, Widecombe: 37, Worcestershire; Broadheath Common; F. M. Day, det. E. Nelmes.

753/49f. Carex Goodenowii Gay, var. melaena Wimm. 3, S. Devon; Teignhead, Lydford, W. Keble Martin and G. T. Fraser, det. E. Nelmes.

*753/52. Carex elongata L. 14, E. Sussex (W.-Dod; 1937, 483).

†753/53(2). **Carex Crawfordii** Fernald in *Proc. Amer. Acad.*, *5*, 37, 469 (1902) [*C. winepegensis* C. B. Clarke ined.; *C. scoparia* Schkuhr, var. *minor* Boot]. 16, W. Kent; pit near Farnborough: native of Atlantic N. America: a few plants growing near *C. vulpinoidea* Michaux (see p. 459): of native British species this is nearest to *C. leporina* L., from which it may be distinguished at a glance by the very much narrower golden glumes.—J. E. Lousley.

753/57×59. ×Carex axillaris Good. 34, W. Gloster; Kempley, F. M. Day. [Add to *C.F.*; not N.C.R., see White, *Flora of Bristol*, 628 (1912).—Ed.]

753/60. Carex contigua Hoppe. 3, S. Devon; Kingsteignton, G. T. Fraser, det. E. Nelmes. [This species is rare in Devon, many of Hiern's records and others belong to *C. Pairaei* F. Schultz.—G.T.F.] 12, N. Hants.; hedgebank near the waterworks, Greywell, P. M. Hall, H. W. Pugsley, E. C. Wallace, and A. J. Wilmott. 36. Hereford; Cummins Farm, Colwall: 37, Wores.; Pixham, Powick; F. M. Day, det. E. Nelmes.

753/61. Carex Pairaei F. Schultz. Delete from *C.F.* 14, E. Sussex (W.-Dod; 1937, 482). *88, Mid Perth; roadside bank west of Ballinluig: hedgebank, Weem, near Aberfeldy; P. M. Hall, R. Mackechnie, W. A. Sledge, and E. C. Wallace. [A considerable extension of range: there does not appear to be any previous record north of Sedbergh, v.-c. 65.—Ed.]

753/63×57. ×Carex Boenninghauseniana Weihe. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 481): see *J.B.*, 95 (1909), for previous record.

753/67. Carex arenaria L. H.1, S. Kerry; stony shore of Caragh Lake, J. E. Lousley and R. C. L. Burges.

753/68. Carex divisa Huds. 9, Dorset; Chesil Bank, Abbotsbury, Sir M. Abbot Anderson and G. T. Fraser. Add to *C.F.* 14, E. Sussex (W.-Dod; 1937, 478-9): see *J.B.*, 54 (1906), for previous record. *41, Glamorgan; Saltmarsh near Cardiff, Miss E. Vachell.

753/71. Carex rupestris All. 88, Mid Perth: north side of Glen Lyon, R. Mackechnie and E. C. Wallace. [A valuable record;

Buchanan White, *Flora of Perthshire*, p. 321, only cites two records for this species—"Ben Héasgarnich, 1886 (!)" and an unconfirmed record for Lawers; remove ? after 88 in *C.F.*—Ed.]

753/74. Carex pulicaris L. 12, N. Hants.; in several meadows near Weaver's Down, Liphook, E. C. Wallace. 69, Westmorland; Hutton Roof Crag, in limestone crevices, a very unusual habitat, J. E. Lousley.

753/75. Carex dioica L. 12, N. Hants.; in a small area on a heath near Liphook, E. C. Wallace. [A welcome discovery of a species which has only been recorded twice previously in Hants.—Ed.]

†754/1. Panicum miliaceum L. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser.

†754/8. Echinochloa Crus-galli (L.) Beauv. 3, S. Devon; Newton Abbot tip, Wolborough, A. Crawshaw and T. Stephenson. *†7, N. Wilts.; Bromham, Miss B. Gullick and J. D. Grose. †16, W. Kent; Hayes, D. McClintock.

†754/8c. Echinochloa Crus-galli (L.) Beauv., var. aristata S. F. Gray. 16, W. Kent; Greenstreet Green, near Farnborough, J. E. Lousley.

*†754/10. Digitaria sanguinalis (L.) Scop. 8, S. Wilts.; casual in garden, Salisbury, 1933, Gullick (1937; 84). *†13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 494). *†16, W. Kent; Chislehurst and Bickley, D. McClintock.

†756/1. Setaria italica (L.) Beauv. 23, Oxon.; waste ground, Oxford, J. P. M. Brenan and J. F. G. Chapple. †41, Glamorgan; rubbish heap, Penarth Road, Cardiff, R. L. Smith and F. Norton, as *Panicum italicum* L.

†756/2. Setaria viridis (L.) Beauv. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser. Add to *C.F.* †13, W. Sussex (W.-Dod; 1937, 494): see *J.B.*, 55 (1906), for previous record.

†758/3. Spartina Townsendii H. & J. Groves. 3, S. Devon; Dawlish Warren: with reference to the record in *B.E.C. 1936 Rep.*, 288 (1937), the Secretary of the Warren Golf Club informs me that 1000 setts were planted out in November 1935.—G. T. Fraser. *14, E. Sussex (W.-Dod; 1937, 496). 15, E. Kent; Pegwell Bay, Miss E. Day. 41, Glamorgan; Aberthaw, spontaneous, Hon. G. Charteris. *53, S. Lincs.; Holbeach St Matthew, Miss M. Brown, see p. 434.
*†51, Flint; opposite Connah's Quay on the Dee Estuary: 1000 sets planted on bare sand in February 1928 had disappeared by 1934. 58, Cheshire; Mersey Estuary near Stanlow Point: the origin of the plant in this locality is obscure but it was probably spontaneous: by 1931 it

had spread so much that the Port of Liverpool authorities took steps to remove it and by 1936 none remained. †59, S. Lancs.; planted for reclamation of foreshore north of Southport, 1936, and likely to be crowded out by planted *Puccinellia maritima*: planted twice near mouth of R. Alt, Hightown, to prevent coast erosion and extirpated in 1931-2. —J. D. Massey (*NW. Nat.*, *12*, No. 3, 308-310).

†763/2. Sorghum halepense (L.) Pers. 41, Glamorgan; rubbish heap, Penarth Road, Cardiff, R. L. Smith and F. Norton.

†765/7b. Phalaris paradoxa L., var. praemorsa Coss. & Dur. 39, Staffs.; waste ground, Burton-on-Trent, J. P. M. Brenan and J. F. G. Chapple, det. C. E. Hubbard.

†766/2. Anthoxanthum aristatum Boiss. Delete from *C.F.* 14, E. Sussex and add 13, W. Sussex (W.-Dod; 1937, 497): for previous record for 13 see *J.B.*, 96 (1909).

†770/3b. Alopecurus agrestis L., var. **tonsus** Blanche. See *B.E.C. 1936 Rep.*, 415, 1937.

770/5×1. ×Alopecurus hybridus Wimm. 12, N. Hants.; marshy field on south side of R. Blackwater between Eversley Cross and Finchampstead: 17, Surrey; marshy fields near Pyrford Lock and near Newark Abbey: 21, Middlesex; marshy field by canal, Harefield; A. H. G. Alston and N. Y. Sandwith, confirmed by C. E. Hubbard. A variable hybrid, the best intermediate of the above being that from Pyrford Lock, while that from Harefield approaches *A. pratensis* L. very closely: previously recorded from Surrey, but apparently new to Hants and Middlesex.

†777/1k. Phleum pratense L., var. Bertolonii Beck. 17, Surrey; Carshalton, casual in allotment. G. Bettles, comm. A. L. Still; det. Kew.

777/2. Phleum alpinum L. 88, Mid Perth; north side of Meall nan Tarmachan, three plants only, R. Mackechnie and E. C. Wallace.

†780/1. Agrostis semiverticillata (Forssk.) C. Christens. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 502): see *B.E.C. 1923 Rep.*, 231 (1924), for previous record. *†33, E. Gloster.; in abundance on the edge of a lily-pool in the overgrown grounds of Treherne Court, near Frampton-on-Severn, Mrs Verey, det. C. E. Hubbard.

780/4. Agrostis setacea Curtis. 8, S. Wilts.; abundant on Alderbury Common, now a plantation, Gullick (1937; 84): Landford Common, J. D. Grose.

783/1. Calamagrostis epigeios (L.) Roth. 3, S. Devon; cliffs near Exmouth, F. M. Day. 16, W. Kent; Hayes Common, D. McClintock.

*108, W. Sutherland; Island of Handa: the most northerly British locality yet recorded.—J. W. and H. Heslop Harrison (1937; 8).

785/1. Apera Spica-venti (L.) Beauv. Add to *C.F.* 13, W. Sussex and 14, E. Sussex (W.-Dod; 1937, 504): see *J.B.*, 96 (1909), for previous records.

*787/2. ×Ammophila baltica Link. 108, W. Sutherland; Island of Handa, with *Calamagrostis epigeios* (L.) Roth and *Ammophila arenaria* (L.) Link; new to Scotland; the inflorescences were more compact than is the case at Ross Links (v.-c. 68).—J. W. and H. Heslop Harrison (1937; 8).

791/4. Deschampsia flexuosa (L.) Trin. 8, S. Wilts.; Langley Wood, Redlynch: Semley: Donhead St Mary, Gullick (1937; 84).

†794/6. Avena strigosa Schreb. 66, Durham; near Birtley, H. Heslop Harrison (*Vasc.*, *23*, No. 3, 108). †90, Angus; barley-field near Loch Lintrathen, R. H. and M. Corstorphine and A. L. Still.

800/1. Sieglingia decumbens (L.) Bernh. 61, S.E. Yorks.; Allerthorpe Common: Bromfleet; A. K. Wilson.

802/1d. Phragmites communis Trin., var. flavescens Custer. 3, S. Devon; Abbotskerswell, T. Stephenson.

†808/1. Cynosurus echinatus L. 21, Middlesex; gravel-pit near Chiswick Bridge, Lady Alethea Eliot.

813/1. Molinia caerulea (L.) Moench. 7, N. Wilts.; Chilton Foliat, Grose (1937; 89).

814/1. Catabrosa aquatica (L.) Beauv. 3, S. Devon; Exminster, F. M. Day and G. T. Fraser: Preston, Kingsteignton, 1936, G. T. Fraser: near Dawlish Warren, 1936, T. Stephenson. 8, S. Wilts.; Bemerton: Bishopstone: S. of Downton: Donhead St Andrew, Gullick (1937; 84). 75, Ayr; Ardrossan, D. McClintock, det. C. E. Hubbard at Kew. [Add to *C.F.*, but not N.C.R., see *Top. Bot.*, *Supp.* i, 105 (1905).—Ed.

†815/6. Eragrostis pilosa (L.) Beauv. 61, S.E. Yorks.; Olympia sidings, 1933, W. A. Sledge, det. C. E. Hubbard.

*818/1. Melica nutans L. 48, Merioneth; woodland on the western flank of Craig-y-Benglog, E. Price Evans, comm. Dept. Bot., Nat. Mus. Wales.

819/1b. Dactylis glomerata L., var. abbreviata Drej. 3, S. Devon; Berry Head, Brixham: Bigbury, G. T. Fraser.

824/3. Poa pratensis L., var. subcaerulea (Sm.). 107, E. Sutherland; Brora Sands, Dornoch, Miss E. S. Todd, det. C. E. Hubbard.

*824/4. Poa irrigata Lindm. Alderney; above Watermill Farm, 1934, Jackson, Jackson, and Airy-Shaw (1937, 300).

824/10c. Poa compressa L., var. polynoda Parn. 17, Surrey; pasture, Woodcote Park, Epsom, E. C. Wallace, det. W. O. Howarth.

*825/3b. Glyceria declinata Bréb. 108, W. Sutherland; Island of Handa, J. W. and H. Heslop Harrison (1937; 9).

825/4. Puccinellia distans (L.) Parl. 3, S. Devon; Exminster, F. M. Day and G. T. Fraser: Kingsbridge, T. Stephenson; both det. C. E. Hubbard. 66, Durham; Billingham Marshes (an inland locality), H. Heslop Harrison (*Vasc.*, *23*, No. 3, 108).

*825/7. Puccinellia fasciculata Bickn. 14, E. Sussex (W.-Dod; 1937, 517).

825/8. Puccinellia rupestris (With.) Fern. & Weath. 3, S. Devon; Exminster, G. T. Fraser, det. C. E. Hubbard.

826/1. Scleropoa rigida (L.) Griseb. 23, Oxon.; near Broughton, J. P. M. Brenan and J. F. G. Chapple.

826/7c. Festuca rubra L., var. dumetorum (L.) How. 43, Radnor; New Radnor, J. F. G. Chapple and N. D. Simpson, det. W. O. Howarth.

826/7e. Festuca rubra L., var. glaucescens Heg. & Heer. 43, Radnor; New Radnor, J. F. G. Chapple and N. D. Simpson, det. W. O. Howarth.

826/12. Festuca capillata Lam. 8, S. Wilts.; Landford Common, J. D. Grose.

†826(2)/1. Nardurus maritimus (L.) Janchen. 6, N. Somerset; Bristol tip, J. P. M. Brenan and Mrs C. I. Sandwith.

*†827/1(2). Bromus Gussonei Parl. 15, E. Kent; cliffs at Ramsgate, A. H. Carter, comm. J. E. Lousley. *†55, Leicester; near Narborough, railway embankment, A. E. Wade, comm. Dept. Bot., Nat. Mus. Wales (as *B. rigens* L.).

827/5. Bromus madritensis L. W.-Dod (1937) gives no records for 14, E. Sussex: delete in *C.F.*—Ed.

†827/9. Bromus inermis Leyss. 20, Herts.; well-naturalized along the canal near Tring Station, Miss M. Brown. †34, W. Gloster; Filton railway at Stoke Gifford, 1936, I. Evans (Sandwith; 1937, 180).

†827/13. Bromus unioloides H. B. K. 3, S. Devon; Harford, T. Stephenson, det. A. J. Wilmott.

827/17. Bromus commutatus Schrad. Jersey; St Brelade's, J. F. G. Chapple: Guernsey; 1936, Lady Davy; both det. C. E. Hubbard. [Although *C.F.* does not record "S.", there are records for Jersey, Guernsey and Sark in *J.B.*, 428 (1907).—Ed.]

*827/18. Bromus racemosus L. 13, W. Sussex (W.-Dod; 1937, 525). Add to *C.F.* 14, E. Sussex (W.-Dod; *loc. cit.*): see *J.B.*, 96 (1909), for previous record.

827/19b. Bromus hordeaceus L., var. glabratus (Hartm.). Jersey; St Ouen's, J. F. G. Chapple, det. C. E. Hubbard.

827/19e. Bromus hordeaceus L., var. pseudo-racemosus (Wats.) Asch. & Graebn. 1, W. Cornwall; roadside, Ruan Minor, N. Y. Sandwith, confirmed by C. E. Hubbard.

827/19i. Bromus hordeaceus L., var. Thominii (Hardouin) Aschers. & Graebn. Jersey; La Poulente: La Moie: St Ouen's, a form with hairy spikelets; J. F. G. Chapple, det. C. E. Hubbard.

827/19(2). Bromus lepidus O. R. Holmberg. 6, N. Somerset; old quarry near Twerton-on-Avon, 1936, C. and N. Sandwith (1937, 179).

*†827/20. Bromus molliformis Lloyd. 39, Staffs.; Burton-on-Trent, J. P. M. Brenan and J. F. G. Chapple, det. C. E. Hubbard.

827/21. Bromus interruptus Druce. Add to *C.F.* 13, W. Sussex (*J.B.*; 1906, 56), a record which has been overlooked by W.-Dod (1937; 526).—Ed.

†827/22. Bromus arvensis L. 66, Durham; near Birtley, H. Heslop Harrison (*Vasc.*, *23*, No. 3, 108).

†827/24. Bromus scoparius L. 6, N. Somerset; Bristol tip, J. P. M. Brenan and Mrs C. I. Sandwith.

†827/26c. **Bromus Danthoniae** Trin. (*A. macrostachys* Desf., var. *triaristatus* Hack. of *B.P.L.*). 6, N. Somerset; tip, Bristol, Mrs C. I. Sandwith and J. P. M. Brenan.

†828/3. Brachypodium distachyon (L.) Beauv. 34, W. Gloster; Avonmouth Docks, J. P. M. Brenan.

†829/2. Lolium temulentum L. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 528-9): see *J.B.*, 97 (1909), for previous record.

†829/3. Lolium remotum Schrank. Add to *C.F.* 13, W. Sussex (W.-Dod; 1937, 528): see *J.B.*, 97 (1909), for previous record. *C.F.* records 14, E. Sussex for which there are no records in W.-Dod (*loc. cit.*). —Ed.

†829/4b. Lolium multiflorum Lam., var. italicum A. Braun. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser.

†829/4c. Lolium multiflorum Lam., var. compositum (Thuill.) Mutel. 3, S. Devon; Newton Abbot tip, Wolborough, G. T. Fraser.

830. Agropyron Gaertn. All the Devon specimens of *A. pungens* and *A. repens* were determined by C. E. Hubbard at Kew.

830/2. Agropyron pungens (Pers.) Roemer & Schultes. 3, S. Devon; Dawlish Warren, G. T. Fraser.

830/2d. Agropyron pungens (Pers.) Roemer & Schultes, var. aristatum Hack. 3, S. Devon; Exminster: Dawlish Warren, 1936; G. T. Fraser. 41, Glamorgan; crevices of rocks on shore, Sully, A. E. Wade, comm. Dept. Bot., Nat. Mus. Wales.

830/4. Agropyron repens (L.) Beauv. 3, S. Devon; Dawlish Warren, E. M. Phillips; "a form with the upper surface of the leaf-blade not prominently ribbed and bearing scattered longer hairs," det. C. E. Hubbard.

830/4b. Agropyron repens (L.) Beauv., var. dumetorum (Hoffm.) S. F. Gray. 3, S. Devon; Bere Ferrers, E. M. Phillips.

830/4c. Agropyron repens (L.) Beauv., var. aristatum Baumg. (=*Triticum Leersianum* Roemer & Schultes.) 3, S. Devon; Abbotskerswell, T. Stephenson.

830/4d. Agropyron repens (L.) Beauv., var. Vaillantianum (Schinz & Keller) Roemer & Schultes. 3, S. Devon; Bere Ferrers, E. M. Phillips: Exminster, G. T. Fraser.

830/4e. Agropyron repens (L.) Beauv., var. lasiorachis Hack. 3, S. Devon; Bere Ferrers, E. M. Phillips: Exminster, G. T. Fraser: Kingsteignton, T. Stephenson.

830/4f. Agropyron repens (L.) Beauv., var. glaucum Doell. 3, S. Devon; Bere Ferrers, E. M. Phillips: Exminster, F. M. Day and G. T. Fraser: Haccombe, G. T. Fraser.

830/6. Agropyron caninum (L.) Beauv. 3, S. Devon; Torbryan: Abbotskerswell; T. Stephenson.

†830/10. **Agropyron Buonapartis** (Spreng.) Dur. & Schinz. (*A. patulum* Trin. of *B.P.L.*). 6, N. Somerset; tip, Bristol, Mrs C. I. Sandwith and J. P. M. Brenan.

†831/1. Secale cereale L. 23, Oxon.; waste ground, Oxford, J. P. M. Brenan and J. F. G. Chapple, det. C. E. Hubbard.

†832/11. Aegilops cylindrica Host. 41, Glamorgan; rubbish heap, Penarth Road, Cardiff, Mrs Sandwith, J. P. M. Brenan and R. L. Smith.

833/1. Pholiurus filiformis (Roth) Schinz & Thellung. 3, S. Devon; Bere Ferrers, W. Keble Martin, G. T. Fraser and E. M. Phillips.

†835/7. Hordeum jubatum L. 17, Surrey; Postford Mill, Lady V. Russell and Miss E. Vachell.

†835/10. Hordeum vulgare L. 39, Staffs.; waste ground, Burton-on-Trent, J. P. M. Brenan and J. F. G. Chapple.

†835/12. Hordeum distichon L. 23, Oxon.; waste ground, Oxford, J. P. M. Brenan and J. F. G. Chapple, det. C. E. Hubbard.

†836/1. Elymus arenarius L. 66, Durham; railway embankment south of Billingham station, H. Heslop Harrison (*Vasc.*, *23*, No. 3, 108).

†836/4. Elymus Caput-Medusae L. 16, W. Kent; Tonbridge tip, J. P. M. Brenan.

†836/8. **Elymus Delileanus** Schultes, *Mantissa*, *2*, 424. *E. geniculatus* Delile, *Fl. Eg.*, 174, non Curtis. *E. rachitrichus* Hochst. ex Jaubert & Spach, *Illustr.*, *4*, 30. *Crithopsis rhachitricha* Jaub. & Spach, *l.c.* Syria, Palestine, Egypt, Persia: adventive at Port Juvenal, France. 6, N. Somerset; Bristol tip, J. P. M. Brenan and Mrs C. I. Sandwith.

*839/1. Juniperus communis L. 44, Carmarthen; a solitary bush, rocky mountain-side, near Ystradffin, Llanfair-ar-y-bryn, J. F. Jones, comm. Dept. Bot., Nat. Mus. Wales.

*†841/1. Pinus sylvestris L. 13, W. Sussex and *†14, E. Sussex (W.-Dod; 1937, 535).

844/2c. Equisetum arvense L., var. nemorosum H. Braun. 33, E. Gloster; Little Barrington, F. M. Day. 88, Mid Perth; roadside ditch, Pass of Lyon, E. C. Wallace.

*844/2×5. ×Equisetum litorale Kühl. 12, N. Hants.; ditch and canal-bank between North Warnborough and Odiham, A. H. G. Alston and N. Y. Sandwith. *H.2, N. Kerry; E. shore of Lower Lake, Killarney, 1936, P. M. Hall and N. D. Simpson, det. A. H. G. Alston.

844/3d. Equisetum sylvaticum L., var. capillare Hoffm. 88, Mid Perth; Drummond Hill opposite Fortingall, E. C. Wallace.

844/7. Equisetum hyemale L. 88, Mid Perth; many plants over a small area of wet stony moorland in the Invervar Corrie, Glen Lyon, *c.* 2000 ft., R. Mackechnie and E. C. Wallace. [An unexpected find at so high an elevation; the only other record I know of this species at subalpine or alpine level is C. E. Salmon's in *Journ. Bot.*, 1903, 275, for v.-c. 97—" sparingly on Gulvain at 1750 ft. Mr Bennett tells me it is very scarce in West Scotland, and its occurrence at this elevation was previously unknown to him; see his article in *Ann. Scot. Nat.* for January 1903, 47."—E.C.W. Druce, *C.F.*, 378, in addition to the Gulvain altitude, refers to " 1700 ft. in Co. Down."—Ed.]

844/9. Equisetum variegatum (Schleich.) Weber. 65, N.W. Yorks.; Kisdon Force, near Keld, W. A. Sledge.

851/1. Asplenium marinum L. 45, Pembroke; Broadhaven, J. F. G. Chapple.

851/9. Asplenium septentrionale (L.) Hoffm. 3, S. Devon; high rocks in the Teign valley, W. Keble Martin, confirming a record by Briggs and Rogers in *Journ. Bot.*, 1882.

854/3. Polystichum aculeatum Roth. 33, E. Gloster; Hilcot, Miss L. Abell.

856/4b. Dryopteris dilatata Presl, var. tanacetifolia Lam. & DC. 8, S. Wilts.; Stourton: Semley Hill; J. D. Grose, det. A. H. G. Alston.

856/5. Dryopteris aemula (Ait.) O. Kuntze. Add 67, S. Northumberland to *C.F.*, Temperley (1937 A, 10).

856/11. Phegopteris Robertiana (Hoffm.) J. A. Braun. 33, E. Gloster; Andoversford, Miss L. Abell.

857/4. Cystopteris fragilis (L.) Bernh. Bracket in *C.F.* 13, W. Sussex as doubtful and add *14, E. Sussex, also in brackets as doubtful (W.-Dod; 1937, 541).

859/1. Ceterach officinarum Lam. & DC. 16, W. Kent; Hayes, D. McClintock.

863/1. Hymenophyllum tunbridgense (L.) Sm. Bracket in *C.F.* 13, W. Sussex, error (W.-Dod; 1936, 535).

863/2. Hymenophyllum peltatum Desv. Add 67, S. Northumberland to *C.F.*, Temperley (1937A, 10).

865/1. Botrychium Lunaria (L.) Sw. 3, S. Devon; Lustleigh Cleave, Miss G. Tucker, comm. G. T. Fraser.

866/1. Ophioglossum vulgatum L. 3, S. Devon; Lustleigh Cleave, Miss G. Tucker, comm. G. T. Fraser.

*867/1. Pilularia globulifera L. 13, W. Sussex (W.-Dod; 1937, 552).

†868/1. Azolla filiculoides Lam. 20, Herts.; Hertford Heath, D. McClintock. †22, Berks.; pond, Leighton Park, J. W. Haughton.

870/6. Lycopodium inundatum L. 8, S. Wilts.; sparingly on Landford Common, Gullick (1937; 84).

870/7. Lycopodium Selago L. 3, S. Devon; Widecombe, T. Stephenson.

872/2b. Nitella opaca Ag., var. attenuata Ag. 3, S. Devon; Kennick Reservoir, Bridford and Christow parishes: seen only in the Upper Reservoir (Torquay Waterworks) and apparently confined to the west side, in water from 1 to 8 feet deep; G. T. Fraser, det. G. O. Allen.

*872/5. Nitella translucens Agardh. 14, E. Sussex (W.-Dod; 1937, 556).

873/2. Tolypella prolifera Leonh. Delete from *C.F.* 14, E. Sussex (W.-Dod; 1937, 556).

873/3. Tolypella glomerata Leonh. 61, S.E. Yorks.; Kilnsea, near Spurn, R. Good and W. A. Sledge.

*876/16. Chara globularis Thuill. 4, N. Devon; Meldon quarry, G. T. Fraser and W. Keble Martin, det. G. O. Allen. 59, S. Lancs., canal, Reddish, Miss E. S. Todd, det. G. O. Allen.

*876/17. Chara delicatula Agardh. 13, W. Sussex and *14, E. Sussex (W.-Dod; 1937, 553).

SOME FLOWERING-TIME FACTS AND PROBLEMS.

F. Rilstone, A.L.S.

The fact that the south-western parts of the British Isles form an early-flowering area for the first spring flowers is so well advertised commercially that the balancing fact of its being a *late* area for summer flowering is almost entirely overlooked.

Little is known of the relative flowering times of most British plants, but records of the first flowering each season of eighteen well-known species in a great many stations all over the British Isles are received and tabulated by the Phenological Committee of the Royal Meteorological Society. This is a mere fraction of the total number of our species, but the results allow the formulation of certain general rules and provide a few puzzling problems.

Flowering-time for the purpose of these records may perhaps be fittingly compared with the flowing tide. In early spring the tide sets in strongly from the south-west. In summer it flows, and in late summer perhaps just as strongly, from the south-east. Two or three examples from the Committee's 35-year averages will show this change of direction.

The blackthorn, *Prunus spinosa*, has its first flowers open in the south of Ireland on March 23rd, S.E. England waits till April 4th for the first blossom, N.W. England till April 12th, N.E. England till April 17th, and N. Scotland till April 25th. But the flowering season of *Chrysanthemum Leucanthemum* begins in S.E. England on May 21st, reaches S. Ireland on May 24th, N.W. England on June 3rd, N.E. England on June 6th, and N. Scotland on June 16th. Corresponding dates for *Centaurea nigra* (agg.) are S.E. England June 20th, S. Ireland July 3rd, and N. Scotland July 23rd.

The following table gives a picture of the swing-over of the floral tide from S.W. to S.E.:—

Ranunculus Ficaria—S. Ireland 18 days earlier than S.E. England.
Prunus spinosa—S. Ireland 12 days earlier than S.E. England.
Aesculus Hippocastanum—S. Ireland 3 days earlier than S.E. England.
Crataegus oxyacantha (agg.)—S. Ireland 1 day earlier than S.E. England.
Rosa canina—S. Ireland 3 days later than S.E. England.
Centaurea nigra (agg.)—S. Ireland 13 days later than S.E. England.

This gives plainly enough the general trend of the flowering progression. And clearly it is to be explained in terms of temperature. In winter and spring the south-west is warmer than the south-east, but with the advance of summer the position is reversed and in the

speeding up of flowering dates by extra warmth the south-east naturally has the advantage.

Considering that water absorbs heat more slowly than land, it is probable that marsh and bog plants in the west are still more retarded than those shown on the list. Thus the Editor in his account of the Irish marsh orchids in the 1936 Report mentions that he saw no spikes of *O. latifolia* in Ireland during the latter part of May, though in Hants and Dorset the species was then well in flower.

The set of the late summer flowering progression is not so clearly shown as that of early spring, since *Centaurea nigra* is the only plant given in the lists showing such a marked difference between S.E. England and S. Ireland. Of the other late-summer plants given, *Campanula rotundifolia* shows S.E. England one day earlier than S. Ireland and 12 days earlier than N. Scotland, and *Convolvulus sepium* 5 days and 15 days earlier respectively, while *Scabiosa Succisa* is in a class all its own.

The flowering progression of the last-named, indeed, is quite a puzzle. It is always in flower in N. Scotland before it opens elsewhere.[1] Thus in 1936 it was reported thence on July 17th, and the progression then swept southward, reaching N.E. England on August 1st, S. Ireland on August 4th, and S.E. England on August 8th. There must be a reason for this reversal of the usual order. But what can it be? Is it a matter of light intensity? And are there any other plants which resemble it in this respect?

The writer would suggest that some interesting facts might come to light if a number of members of this Society in various parts of the country would keep, even for a single season, records of first flowering dates of all our commoner plants.

A minor puzzle is provided by the pistillate flowers of the hazel, the season of which opens in S.E. England on an average on February 1st and a day later in S. Ireland. Possibly shrubs with flower-buds ripened on woody branches during the previous summer may not be expected to conform to the same law as non-woody plants. The fact that the ivy has a south-west to north-east progression from September 20th in the south-west to October 18th in N. Scotland seems to support this suggestion.

[1] "There seems to be some evidence that the Devil's-bit Scabious flowers earlier in the North of England than in the South . . . it never fails to begin flowering . . . here (Aberystwyth) by the 10th of June."—J. H. Salter (*NW. Nat.*, *12*, No. 4, 402-403).

RIVAR: A TOPOGRAPHICAL NOTE.

J. D. Grose.

There has been considerable confusion about the records for *Myosotis sylvatica* Ehrh. in the Rivar district on the borders of Berks and Wilts. The difficulties will be appreciated when it is explained that there are no less than four woods with the word "Rivar" in their names, that the spellings "River" and "Riever" have been frequently used in the past, and that the county boundary in this neighbourhood has been changed three times.

There are two stations for *M. sylvatica*.

1. Rivar Copse. This wood is known locally as "Great Rivar Copse," but is named simply "Rivar Copse" on the 6-inch Ordnance Survey. As mentioned by Mr P. M. Hall (*B.E.C. 1936 Rep.*, 407 (1937)), it is left without a name on the 1-inch O.S., but may be identified by the word "Tumulus" printed across it. Most of the wood is in Berks, but a small portion in the south-western corner is in Wilts. The plant grows along the southern boundary of the wood, and reaches to within about five yards of the Wiltshire boundary. I am firmly of the opinion that the plant has not been found on the Wiltshire side of the division because here the mixed character of the wood gives place immediately to a beech plantation, where it is most unlikely that this species would grow. Despite successive boundary changes, this station has always been in Berkshire.

2. Rivar Firs. This locality is nearly 2½ miles west of Rivar Copse. On the 1-inch O.S. it is the northernmost copse of the group on Rivar Hill. *M. sylvatica* is here much more abundant than in the first locality. The first Ordnance Survey, 1817, shows a detached portion of Berkshire south of Rivar Hill, but Rivar Firs is shown as just in Wiltshire. Apparently, however, this was a mistake, as when in 1844 the supposedly detached portion was transferred to Wilts, it was ascertained that this area was joined to Berks by a narrow neck of land. The transfer was consequently annulled, and the district remained in Berks. Rivar Firs is situated in this neck of land, so it is certain that whatever the position before 1844, from this date for many years the station was in Berks. In 1895 the boundary was again changed, and Rivar Firs was finally (let us hope) placed in Wiltshire.

The first certain find of *M. sylvatica* in the Rivar district was by Dr Druce in 1890, afterwards recorded in the *B.E.C. 1896 Report*. The record is repeated in *Fl. Berks*, 352, 1897: "In great plenty in Riever Wood, which is a picturesque hanging wood on the north escarpment of the Chalk forming the south-west boundary of the county . . . in the locality given above it extends also into Wilts." The question arises: Was Dr Druce referring to Rivar Copse or Rivar Firs? At the time of his find (1890) both stations were in Berks and right on the border, but at the time of publication (1896-7) the Rivar

Firs station was well into Wilts. The Rivar Copse station seems to have been known well to botanists for many years, so it is very probable that that was where Dr Druce found it, and that the information was passed on. The statement that it extended into Wilts must therefore, I believe, be an error. The Rivar Firs station does not seem to have been recorded before 1936, and, I think, must constitute the first record for Wiltshire (*B.E.C. 1936 Rep.*, 268 (1937)).

Rather curiously, the map in *Fl. Berks* (1897) shows an older boundary than that in *Fl. Wilts* (1888).

Mr P. M. Hall (*B.E.C. 1936 Rep.*, 407 (1937)), mentions that there is similar uncertainty about the locality for *Chrysosplenium alternifolium* L. in this district. This species was first found by Mr C. P. Hurst in 1910 in the Berkshire portion of Rivar Copse. A search was made in 1937, and, with the help of notes kindly supplied by Mr Hurst, the plant was refound by Mr E. C. Wallace. The locality is unusual, and one would have thought hardly damp enough for the species. The altitude is about 800 feet, and associated plants are *Nepeta hederacea*, *Paris*, *Urtica dioica*, etc. Strangely, *C. oppositifolium* is absent.

A FURTHER CONTRIBUTION TO OUR KNOWLEDGE OF THE FLORA OF THE ISLE OF RAASAY (INNER HEBRIDES).

(Communicated by the Department of Botany, King's College, University of Durham).

For three consecutive years, 1935, 1936 and 1937, expeditions have been dispatched from the Department of Botany, King's College, Newcastle-upon-Tyne, for the purpose of investigating the Flora and Fauna of the islands adjacent to Skye. During the first two years our efforts were concentrated on the Island of Raasay and its neighbours. As a result we were able to publish a "Flora of the Isle of Raasay and of the Adjoining Islands of South Rona, Scalpay, Fladday and Longay" (*Proceedings of the University of Durham Philosophical Society*, Vol. x, Part 5, pp. 260-304.)

In 1937, spurred on by the success of our earlier labours, we decided to transfer our attentions to the islands lying to the south of Skye, and therefore the Isle of Soay was selected as our centre. The work so begun was very successful, but, in view of its great promise and of the unique opportunities presented for its completion in 1938, when our headquarters will be fixed on the Islo of Rhum, no account will be published until later in the year.

After leaving Soay, we returned once again to Raasay to make a final attack on its phytogeographical problems. In addition, Eilean Tigh, an islet situated in Caol Rona, between Raasay and South Rona, was examined by Mr R. B. Cooke. During those researches many plants new to our lists were detected, and our knowledge of others materially extended. These results are set out in the present communication, and they are the product of the joint labours of Professor J. W. Heslop Harrison, D.Sc., F.R.S., Dr K. B. Blackburn, Miss E. Bolton, M.Sc., Miss H. B. Bond, B.Sc., Dr W. A. Clark, Mr Randle B. Cooke, Miss H. Heslop Harrison, M.Sc., and Miss B. Todd, B.Sc.

*=New record for v.-c. 104. ‡=New record for Raasay.

*Nuphar lutea (L.) Sm., var. intermedia Aschers.—Abundant in a loch to the south-west of Brochel. The finding of its pollen grains at a considerable depth in the peat by the margin of the loch shows that it has been there for a very long time.

Corydalis claviculata (L.) DC.—To the two places previously mentioned can now be added a third locality near the mouth of the Storab Burn, and a fourth near Hallaig.

*Cochlearia anglica L.—On the shore near Oskaig.

‡Cerastium vulgatum L., var. alpinum Mert. & Koch—In a moist spot on the west side of Dun Caan.

Stellaria Holostea L.—Further exploration has shown this to occur on the east side of the island, as well as on the west.

Spergularia salina Presl—To the Oskaig and Screapadal records can now be added Eilean Tigh.

Geranium dissectum L.—Also on dry ground which had at one time been under cultivation on Eilean Tigh.

Ulex europaeus L.—Looks even more certainly native on Eilean Tigh.

‡Trifolium medium L.—Very local near the shore to the south of Oskaig.

T. dubium Sibth.—An occurrence near the Inverarish cottages supplements the two previous records.

Anthyllis vulneraria L.—To the three previous places mentioned on the east side of the Island can now be added one on the west, viz., the raised beach near Oskaig, where var. *coccinea* L. prevails.

Vicia hirsuta (L.) S. F. Gray—Also north of Fearns.

Dryas octopetala L.—Occurs south of the previously recorded localities on the cliffs above North Fearns.

Agrimonia odorata Mill.—A fourth habitat, about a mile north of Hallaig, may be added to the three mentioned in "The Flora."

Sorbus rupicola Hedl.—Also on the cliffs near Hallaig, and on the cliffs above Loch a Chadhacharnaich.

‡Sedum acre L.—Locally plentiful on the shingle near the shore at Eyre Point.

‡Lythrum Salicaria L.—Not absent from Raasay as formerly supposed, but occurring on the Lewisian Gneiss near Arnish.

‡Epilobium alsinefolium Vill.—In a wet spot about one mile north of Dun Caan, at approximately 1000 feet. In Perth it is said to ascend to 3600 feet, and to descend to 400 feet in Eigg.

Epilobium angustifolium L.—Also on the cliffs above North Fearns, and more abundant under Dun Caan than previously thought.

Conopodium majus (Gouan) Loret & Barr.—"Frequent in grassy places and often in birchwoods" would better describe this plant than the "not very plentiful" of "The Flora."

Anthriscus sylvestris (L.) Hoffm.—In addition to the locality north of Inverarish it has been seen near the mouth of the Arish Burn.

Ligusticum scoticum L.—Further exploration has failed to reveal the presence of this species on the east side of the island, although on Eilean Tigh it is within a few hundred yards of that area.

‡Artemisia vulgaris L.—Close to some of the cottages at Balachuirn.

‡Arctium vulgare Hill, f. subtomentosum Evans (A. pubens Bab.).—On the cliffs between Screapadal and Hallaig. This form appears to be new to v.-c. 104.

‡Hieracium Shoolbredi E. S. Marshall—On the cliffs near Hallaig. Identified by Mr H. W. Pugsley.

H. anglicum Fr.—Two extra stations are to be noted on the cliffs at Screapadal, and North Fearns.

‡Campanula rotundifolia L.—Very rare and local; in Raasay House grounds, near the German cemetery, and on the cliffs about three miles north of Hallaig.

VACCINIUM VITIS-IDAEA L.—In addition to being on the top of Dun Caan, it is more widespread at 700 feet and over than "The Flora" indicates. It likes well drained peaty banks, is generally small, and rarely seems to fruit.

PYROLA SECUNDA L.—Several new colonies of this rare plant were detected in rocky fissures and on grassy slopes to the south-east of Dun Caan.

GLAUX MARITIMA L.—Our earlier remarks about the rarity of this species still hold good, although there are two new stations—near Brochel, and on Eilean Tigh.

*MICROCALA FILIFORMIS Hoffm. & Link—In 1937, growing with *Cicendia pusilla* and *Juncus capitatus* in a hollow along a tributary of the Arish Burn, one single plant was discovered. New to Scotland.

GENTIANA CAMPESTRIS L.—This has now been found in a number of new localities, and is known to extend to the north end of the Island.

DIGITALIS PURPUREA L.—Is not absent from the east side of the Island as formerly supposed.

EUPHRASIA BREVIPILA Burnat & Gremli—To the places previously named can be added—Oskaig, Hallaig and Arnish.

E. CONFUSA Pugsl. × E. BREVIPILA Burnat & Gremli—An additional locality is to be recorded near Hallaig.

‡E. CURTA Fr.—Near North Fearns and on the moors near Loch Storab. Identified by Mr H. W. Pugsley.

‡E. NEMOROSA (Pers.) Löhr—Near Dun Caan. Identified by Mr H. W. Pugsley.

‡E. GRACILIS Fr. × E. CURTA Fr.—What looks to be this hybrid occurs near Dun Caan.

PEDICULARIS PALUSTRIS L.—Thus can now be stated to be not as common as *P. sylvatica*, which is very abundant in damp places on the moors.

*LYCOPUS EUROPAEUS L.—Very rare and local by the shore about a quarter of a mile east of the pier, and at North Fearns; new to v.-c. 104.

×STACHYS AMBIGUA Sm.—This hybrid grows in the Raasay House kitchen garden.

LAMIUM PURPUREUM L.—To the "cultivated ground near Inverarish" can now be added—"ground which has at one time been cultivated on Eilean Tigh."

PLANTAGO MARITIMA L.—The previous records were all from shore localities, but now one can be given for exposed rocky ground a little to the north of Dun Caan at about 1000 feet, where it is very much dwarfed.

‡ATRIPLEX HORTENSIS L.—Near Churchton Bay.

‡A. GLABRIUSCULA Edmondst.—On the shingle at the mouth of the Storab Burn. This is the first record for Raasay, that in "The Flora" being for Rona.

‡Suaeda maritima Dum.—Very rare and local in the salt marsh south of Oskaig.

Polygonum Hydropiper L.—"The Flora" gives this as very rare for one station on Raasay, and commoner for one on Rona; it can now be described as not infrequent in and about cultivated ground from Arnish to Eilean Tigh.

P. cuspidatum Sieb. & Zucc.—Established in a ruined cottage at the extreme north end of the Island.

‡Oxyria digyna Hill—Very local and rare on cliffs above Hallaig.

Rumex conglomeratus Murr. (R. glomeratus Schreb.).—Also by the shore at North Fearns.

‡Salix aurita L. × S. herbacea L.—An old plant of this rare hybrid was discovered on the cliffs south of Hallaig.

Epipactis atropurpurea Rafn.—Also on the cliffs above Hallaig.

Orchis latifolia L. (O. incarnata auct. non L.)—Also in marshy ground near the pier, and on the margin of a small loch, at about 550 feet, on a hill north east of Raasay House. Its flowers are pale pink in the former situation and deep rose pink in the latter.

Gymnadenia conopsea (L.) R. Br.—More widespread and abundant than the earlier account indicates. Very fine east of the pier and near Oskaig.

‡G. conopsea (L.) R. Br. × Orchis purpurella T. & T. A. Stephenson—At Oskaig Point.

Coeloglossum viride (L.) Hartm.—Also locally plentiful on grassy ledges on the cliffs above Hallaig.

Platanthera bifolia (L.) Reichb.—To the previous stations can be added grassy places east of the pier.

‡Juncus bufonius L., var. fasciculatus Koch—In the damp stony hollow where *J. capitatus* grows.

J. macer S. F. Gray—Also near the Post Office.

‡J. bulbosus L., var. fluitans (Lam.) Druce—In some of the higher lochs and pools, where, when growing in two to three feet of water, it fails to flower, and only produces transparent submerged leaves.

‡Potamogeton praelongus Wulfen—Loch na Meilich to the west of Dun Caan.

Carex pauciflora Lightf.—To be found above the right bank of the Arish Burn near Loch na Mna, and above Torran.

C. remota L.—Also near North Fearns, and on the cliffs between Hallaig and Screapadal.

C. limosa L.—A further station exists near Loch Storab.

C. sylvatica Huds.—On the cliffs near Hallaig.

C. helodes Link—Also in the lower part of the gorge formed by the Storab Burn.

‡C. extensa Good.—Very rare by the salt marsh south of Oskaig.

*Milium effusum L.—In a deep cleft in the cliffs above North Fearns.

Deschampsia caespitosa (L.) Beauv.—A form with a blackish inflorescence was collected on the Raasay moors.

‡Molinia coerulea (L.) Moench—In a form with beautiful golden flowers on the moors.

‡Poa nemoralis L.—Rare in the woods around Raasay House.

‡Bromus giganteus L.—In the same habitat as *Milium effusum*.

‡B. secalinus L.—Rare near Torran. [Add to *C.F.*; *Top. Bot.* says "counties all" but without giving details.—Ed.]

‡Lolium multiflorum Lam.—A casual, and probably an escape from cultivation, on field edges near Inverarish, and also on the beach between Eyre and Suisnish Points.

Agropyron caninum (L.) Beauv.—In the "Leek Gorge" near Balachnirn.

Juniperus communis L.—One plant on the cliffs of Screapadal.

Polystichum Lonchitis (L.) Roth—Another station is on the limestone of the cliffs facing north above Hallaig; here it is locally plentiful.

Dryopteris aemula (Ait.) O. Kuntze (Lastrea aemula Breckenridge)—Much more widespread and abundant than the earlier account indicates, and not confined to shady woods.

D. Linnaeana Christ. (Phegopteris Dryopteris Fée)—Less frequent in Raasay than formerly supposed.

D. Phegopteris (L.) Christ. (P. polypodioides Fée)—Far from rare in a variety of situations on Raasay.

Osmunda regalis L.—To the one station for the east side of the Island two for the west can be added; others on the cliffs in Holoman Bay, and near the mouth of the Storab Burn.

Botrychium Lunaria (L.) Sw.—Many other places might be cited in addition to Oskaig Point station.

Equisetum Telmateia Ehrh. (E. maximum Lam.)—Also near Hallaig.

Lycopodium clavatum L.—Very local on the high ground south of the road between Inverarish and Fearns.

FURTHER BOTANISING IN THE OUTER HEBRIDES.

M. S. Campbell, F.L.S.

In 1937 I was able to make another visit to the Outer Hebrides, and as most of the ground covered was new to me it seems desirable to give a detailed list of the vascular plants and Characeae collected. In order to avoid any possible confusion which might arise from the frequent recurrence of similar place names:—e.g., several lochs in Harris are named Langavat—an account of the principal places included in the tour is given.

On the evening of June 25th my brother and I arrived at Stornoway in the Island of Lewis. The approach to the harbour was particularly remarkable for the large bushes of *Rhododendron ponticum* in full bloom and the vast plantation of trees which forms the background to the Castle. The next morning we set out by car for the Butt of Lewis and before coming to the end of the road a stop was made at Lionel, near Port of Ness. Various plants were also gathered on the cliff tops near the Lighthouse, including a belated flowering specimen of *Scilla verna*. We then turned westward and south and drove via Barvas and Bragor to Carloway, where we went down to the harbour, and from there returned to Stornoway.

On the 27th we took the road southward and entered North Harris, collecting at various places near the road, which runs through fine wild and partly very hilly country, with occasional tracts of cultivation surrounding the villages. Tarbert was reached in the afternoon, early enough to permit of some exploring in the neighbourhood. The next day was spent in South Harris, which gave me the opportunity of revisiting Rodel, and in the evening we embarked on the " Lochmor " for North Uist.

On July 2nd Messrs F. Druce and A. J. Wilmott joined us at Newton Lodge (N.U.) and on the days which followed various expeditions were made, the longest of which was to Eaval, an isolated hill of 1138 ft. which is almost as its name suggests, an island. We approached from Locheport, where we were lucky enough to secure and board a motor boat a few moments before the ebbing tide would have made it impossible to get off. We went some distance down the loch—an arm of the sea—and landed, with difficulty, on a rocky, wrack-covered shore and proceeded on foot, over peat-hags and by the shores of (fresh water) Loch Obisary, to the slopes of the hill. The rocks below the summit on the north side were examined and various plants collected. The return to the boat was made by the east side of Burrival. An evening's fishing on Loch an Duin yielded a quantity of *Ruppia spiralis* in beautiful condition.

On July 9th we left Newton Ferry (Port nan Long, on Ordnance map) by motor boat and crossed the Sounds of Berneray and Harris in perfect weather, though the low tide and an abundance of *Laminaria* and other seaweed made landing at Rodel a very slippery business. A

night was spent at Rodel to enable Mr Druce and Mr Wilmott to view the *Antennaria "hyperborea,"* and the following afternoon, after visiting St Clement's Church—an interesting "Ancient Monument"—we drove in slow stages to Tarbert (N.H.). On July 11th, a day of sunshine and brilliant blue colouring, we set out for Amhuinnsuidh, and through the kindness of Sir Samuel Scott we were able to search for *Carex "spiculosa."* Afterwards we went on to where the road ends at Husinish—a place of considerable beauty, opposite the island of Searp, where W. S. Dunean did much of his collecting. In the evening we drove along the north side of East Loch Tarbert to Carnach, opposite Scalpay, and were rewarded by magnificent sunset views and an interesting list of plants.

On July 13th, after a scramble on the lower rocks of Tomnaval in the Forest of Harris, we reached Stornoway, and the next day set out early for the west side of Lewis, going via Carloway to Callanish. Here, magnificently situated on a promontory overlooking Loch Roag, close to Great Bernera, are some remarkable standing stones, reminiscent of those at Stonehenge. We returned to Stornoway by Garynahine and late the same evening left by the "Lochness" for Kyle of Lochalsh.

As much has already been written by others regarding the nature of the country, it is superfluous for me to enter into details. The east side of the islands is mostly wild, roeky, and boggy, but the western side usually presents a green and gentler aspect with considerable dune country, frequently with "sheen white sands." The few salt-marshes are mainly composed of *Armeria*, which, when in flower, colours the inlets pink. Other normal salt-marsh species occur, though more rarely than further south, and often as small forms (e.g. *Aster Tripolium*, "var. *arcticum*," *Juncus Gerardi*, var. *salsuginosus*), but Mr Wilmott thinks these are probably only states, as other speeies (e.g. *Juncus bulbosus*, *Triglochin maritimum*) take on similar peculiar looking forms. On the broad sandy flat north of Northton (S.H.) at the seaward edge of vegetation, similar peculiar small forms were found, e.g., of *Triglochin maritimum* as well as of *Juncus Gerardi*.

With the exception of supplementary material confirming vice-county records, etc., all plants in the following list are from localities other than those mentioned last year. There are ten plants starred as new county records. It is difficult to be certain of their not having been previously published, though they have been checked up by all Outer Hebridean literature so far known to me. Some of these records have been the result of collecting done by my brother (J.W.C.) during other visits. His help in obtaining supplementary material and information has been invaluable. A separate list of these species not included in the *Comital Flora* for v.-c. 110, but which in reality are not new records, is again added.

To Mr Wilmott I tender most grateful thanks for without his assistance and co-operation it would not have been possible to produce this paper. A large proportion of the field work was done by him as well as

most of the critical determinations and the extensive notes on Orchis, etc. He has also provided the photograph for the plate.

In addition, I wish to thank Mr Druce for his energetic help in the field, and the following for critical determinations:—Dr W. O. Howarth, Dr G. Taylor, Colonel A. H. Wolley-Dod, Messrs G. O. Allen, A. H. G. Alston, G. M. Ash, J. E. Dandy, J. E. Lousley, W. R. Philipson, H. W. Pugsley, and A. L. Still.

Initials in parentheses indicate those responsible for determinations and notes preceding them.

Abbreviations used are the same as those in my previous paper (*B.E.C. 1936 Rep.*, 304 (1937)) with the following additions:—F.D.= Francis Druce. J.E.D.=J. E. Dandy. L.=Lewis. N.H.=North Harris. W.R.P.=W. R. Philipson.

All specimens were collected either by Mr Wilmott or myself unless otherwise stated and have been deposited in Herb. Mus. Brit.

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2/2. THALICTRUM MINUS L., sensu lato.
N.H.: Sand hills, Husinish. "All the specimens collected here are of the less glandular form mentioned last year, and are probably *T. montanum* Wallr., though fruits are required for confirmation." (W.)

2/5. THALICTRUM ALPINUM L.
N.H.: Tomnaval.

6/3. RANUNCULUS ACER L.
"Several series were collected in S.H., N.H. and L., in addition to further gatherings in N.U. Some of the small states are probably f. *borealis* Trautv. The fine large form from N.H.: rock ledges below Tomnaval is probably *R. Steveni* Andrz., ex Bess. (*Fl. Exs. Austr.-Hung.*, 1720, form 2)." (W.)

6/7. RANUNCULUS FLAMMULA L.
N.H.: Near Tolmachain. L.: Butt of Lewis.

6/23. RANUNCULUS PAUCISTAMINEUS Tausch.
N.U.: Shallow loch, east of Loch Scarie; Loch a' Chaolais (coll. J.W.C.). L.: Lionel. (W.).

6/32. RANUNCULUS HEDERACEUS L.
L.: Swanibost.

6/33. RANUNCULUS FICARIA L.
N.U.: West side of Burrival. S.H.: Borosdale near Rodel.

7/1. CALTHA PALUSTRIS L.
"A plant with 6 sepals from N.H.: Husinish (more or less normal form with overlapping lobes to lower leaves and shallow crenate leaves; petals narrow). This group requires further study. The following have the subtriangular and deeply crenate leaves characteristic of *C. radicans* Forster. N.U.: Near Newton. S.H.: Nisibost. L.: Lionel.
A small form resembling the variety *minor* occurs in N.U.: Dune marsh near Newton." (W.).

19/1. NUPHAR LUTEUM (L.) Sm.
N.U.: Loch Fada (coll. A. MacCuish). First recorded from N.U. by Macgillivray, 1830, and subsequently confirmed by Shoolbred (*J.B.*, 1895, p. 239; *A.S.N.H.*, 1895, p. 117) who noted it as "in some plenty in several of the smaller lochs on the East side." I have so far failed to find it or hear of it other than in Loch Fada where I am told it is scarce.

20/1. NYMPHAEA ALBA L.
N.U.: Loch by Lochmaddy road near Cringravel. (W.)

20/1c. NYMPHAEA OCCIDENTALIS (Ost.) Moss.
N.U.: In the same locality as *N. alba* and also Loch Creige. L.: Loch Soval. (W.)

21/3. PAPAVER DUBIUM L., em. Lamotte.
N.U.: By Newton Lodge; near Balelone. (W.)

32/9. FUMARIA BASTARDI Bor.
N.U.: Newton (coll. J.W.C.); Balelone; bare patch cut for turf, inside Clachan dunes; east of Loch Scarie (coll. F.D.). (W.)

35/1. NASTURTIUM OFFICINALE R. Br.
N.U.: Near Newton.

39/1. CARDAMINE PRATENSIS L.
N.U.: Near Grenctote, towards Geireann. L.: Lionel.

39/5. CARDAMINE HIRSUTA L.
N.U.: Slopes of Eaval. N.H.: Scree slope below Tomnaval. (W.)

45/6. COCHLEARIA GROENLANDICA auct. angl. (vix L.).
N.U.: Loch Eport, opposite Burrival. L.: Butt of Lewis.

75/1. CRAMBE MARITIMA L.
N.U.: Eilean a' Mhorain (coll. J. A. Nicholson and A. MacAskill). Sea Kale was noted in N.U. by D. C. Burlingham of King's Lynn who visited the Outer Hebrides in June 1848. In the obituary notice written by C. B. Plowright (*Trans. Norf. Norw. Nat. Soc.*, 1902, 7, 416) the following verbatim extract from Burlingham's note book is given:—"1st day:—(Sunday) Went to the head of the Loch (Loch Maddy) over sand, 2 miles —Ring Doterell numerous—saw several Eider ducks—small flock of birds I suppose they were Stints, could not tell. Plants: —Sea-Kale, *Viola lutea*, *Glaux maritima*, *Arenaria peploides*, Scurvy grass." . . . Arthur Bennett states (*A.S.N.H.*, 1905, 166):—"By the kindness of Dr Plowright I have ascertained that there is no specimen in his herbarium." My brother (J.W.C.) when in N.U. last autumn was told of the occurrence of Sea Kale on Eilean a' Mhorain and on hearing that Dr Nicholson and A. MacAskill were going over to the island, asked them to obtain specimens. Local tradition is that the plant was introduced years ago as the result of a wreck near this wee island. It is known to have been growing there for "years back" (well over 100 years) and is reputed to be increasing. Eilean a' Mhorain is situated off the north coast of N.U. between Ard a' Mhorain and Boreray, which scarcely answers Burlingham's description, but as far as my brother could ascertain this is the only known locality in N.U.

77/1. CAKILE MARITIMA Scop.
N.U.: Near Newton.

80/1c. Raphanus Raphanistrum L., var. nov. aureus Wilmott: petalis aureis venis concoloribus.
N.U.: Newton. N.H.: West of Tarbert. "I have been unable to find a name for the form of this species which is abundant and, so far as I have observed, uniform in the North of Scotland, i.e. in the Outer Hebrides (cf. previous paper, 307), Skye, W. Ross, Aberdeenshire (Cockbridge; Braemar) and Perthshire (S. of Spital of Glen Shee). I therefore describe it as a new variety, although its uniformity and distinct distribution may indicate that it is really a subspecies. It is apparently not *Raphanistrum Lampsana* α *sulfurea* F. Gérard (1890: *Rev. Bot. Soc. Fr. Bot.*, 8, 55), which is described as having flowers yellow, veined with yellow and not with violet, for Gérard cites as synonym *R. segetum* Rchb. Fl. Germ. Exc., p. 656, and that is described as with flowers like those of *Brassica oleracea* but smaller. The flowers of var. *aureus* could be described as like those of the Turnip but larger, for the colour is the golden yellow of Buttercups and Potentillas, and not sulphur yellow as in the Cabbage. It is not the var. *flavus* (S. F. Gray, 1821: *Nat. Arr.*, II, 688; "petals yellow, veined with black") Schleb. & Mart. (1834: *Fl. Wurtemb.*, 415) see *1935 Rep.*, 169. Since writing the above I have received var. *aureus* from the I. of Man (Ramsey, coll. C. I. Paton, 1937)." (W.)

88/4. Viola Riviniana Rchb.
N.U.: Middle rocks, Eaval. N.H.: Carnach; scree below Tomnaval. L.: Near Carloway. (W.)

88/6. Viola canina L. em. Rchb.
N.U.: Suenish, near Newton. (W.)

88/11. Viola palustris L. N.U.: Lower rocks, North side of Eaval. N.H.: Scaladale.

88/24. Viola arvensis Murr., var. obtusifolia (Jord.).
N.U.: By Newton Lodge. (W.)

88/34. Viola Curtisii Forster.
N.U.: Fixed dune, near Newton; fallow field, Balelone. (W.)

89/1. Polygala serpyllifolia Hose.
N.U.: Between Burrival and Eaval. The following with pink flowers—S.H.: Borosdale, near Rodel. N.H.: Below Tomnaval; Carnach. (W.)

89/2. Polygala vulgaris L.
N.U.: Newton Ferry; fixed and outer dunes, near Newton. N.H.: Husinish. L.: Balallan; grassy slope, Carloway. (W.)
"The only constant character which I have so far found to separate *P. oxyptera* from *P. vulgaris* is the small size of the flower: every other character—pale colours, shorter sepal narrower than the fruit, narrower leaves, habit, and so on—all may break down although most of them are present in all specimens. In the Outer Hebrides the separation is more diffi-

cult than usual, for not only is the difference in flower size less obvious but the small flowers are more often deep coloured than pale, the habit is variable and the leaves sometimes broadish. Having seen these deep coloured small flowered forms presumably referable to *P. oxyptera*, I would refer the rich "red" flowered plant from Sollas (noted last year: *B.E.C. 1936 Rep.*, p. 307; 89/2) to *P. oxyptera* owing to its small flowers.

89/4. Polygala oxyptera Rchb.
N.U.: Suenish, near Newton, growing flat on a bare denuded slope: an unusual habitat. Some are *P. oxyptera* but whether all I am uncertain: in spite of differences they seemed in the field to be all one kind. Newton Ferry (same locality as noted last year). S.H.: Borosdale, near Rodel; near Seilebost. L.: Grassy slope, Carloway: the flowers are smaller, but not pale coloured; Lionel—? *P. oxyptera* by the small flowers, but leaves broad and colour deep." (W.)

96/1. Silene maritima With.
L.: Butt of Lewis.

98/3. Melandryum album (Mill.) Garcke.
N.U.: Cultivated field, Scolpaig.

100/5. Cerastium vulgatum L. (C. triviale Link).
N.U.: Lingay Strand. S.H.: Near Rodel. N.H.: Scree slope below Tomnaval. L.: Butt of Lewis. (W.)

100/6. Cerastium viscosum L., var. confertum (R. & F.) Druce.
N.H.: Husinish. L.: Lionel. (W.)

100/6c. Cerastium viscosum L., var. elongatum (R. & F.) Druce.
N.U.: Newton Ferry. S.H.: Nisabost. (W.)

100/9. Cerastium tetrandrum Curt.
N.U.: Fixed dune, near Newton; Lingay Strand. (W.)

101/3. Stellaria media (L.) Vill.
N.U.: By Newton Lodge; in a track through heather, north of Burrival. S.H.: Nisibost. N.H.: Carnach.

102/5. Arenaria serpyllifolia L.
N.U.: Suenish, near Newton; sandy slope, Lingay Strand. S.H.: Nisabost; dunes and potato patch.

103/10. Sagina maritima Don.
L.: Butt of Lewis. (W.)

103/11. Sagina procumbens L.
N.U.: Ahmore Strand; shaded niche, Beinn Bhreac; Lochmaddy. N.H.: Husinish; below Tomnaval. L.: Carloway. (W.)

104/1. Spergula arvensis L., em. Rchb.
N.U.: Trumisgarry. N.H.: Near Carnach. L.: Carloway. (W.)

105/2. Spergularia marginata (DC.) Kittel.
N.U.: South of Clachan, near Trumisgarry.

105/3. Spergularia salina Presl.
L.: Salt marsh near Callanish; Butt of Lewis. (W.)

109/1. Montia fontana L., var. lamprosperma (Cham.) Fenzl.
N.U.: Between Burrival and Eaval; near Newton, towards Beinn Bhreac. L.: By the river Carloway; Balallan. (W.)

112/9. Hypericum pulchrum L.
N.U.: Above Newton towards Beinn Bhreac; near Loch an Duin; by Loch na Morgha. L.: Near Callanish.

125/3. Linum catharticum L.
N.U.: Dunes near Newton; sandy slope, Lingay Strand. S.H.: Near Seilebost. L.: Lionel.

127/9. Geranium dissectum L.
N.U.: By Newton Lodge.

127/10. Geranium molle L.
N.U.: Fallow field, Balelone. L.: Lionel.

128/3. Erodium cicutarium (L.) L'Hérit.
N.U.: By Newton Lodge (coll. F.D.), seems to agree with *E. Lebelii* Jord., Salm. & Baker, *J.B.*, *58*, 125-6, 1920. (W.)

132/1. Oxalis Acetosella L.
N.H.: Wet scree below Tonnaval.

149/1. Ulex europaeus L.
N.U.: "Confined to the dyke boundary to North-west of Beinn Mhor: probably planted." (W.)

*†153/3. Medicago sativa L.
N.U.: Newton (coll. and det. J.W.C.).

153/7. Medicago lupulina L.
N.U.: Newton (coll. J.W.C.), larger specimen confirming last year's record.

155/1. Trifolium medium L.
L.: Near Breasclete; Carloway.

155/2. Trifolium pratense L.
N.U.: Semi-fixed dune, near Newton; Suenish, near Newton. N.H.: Husinish. L.: Carloway (coll. F.D.); Lionel.

155/16. Trifolium repens L.
L.: Butt of Lewis.

156/1. Anthyllis Vulneraria L.
N.U.: Fixed dune, near Newton; Scolpaig. N.H.: Husinish. L.: Lionel; Butt of Lewis.

Var. villosa Corb. ? N.U.: Newton. "The form (with spreading hairs on the stem, especially below) is locally abundant, but whether Corbière would have referred it to var. *villosa* or *A. maritima*, var. *sericea* Bréb. is uncertain, for in a large series one plant only was observed without anthocyan in the calyx: some plants were erect, some were spreading, some have broader leaflets than others." (W.)

160/5. Lotus corniculatus L.
S.H.: Nisibost; Northton. N.H.: Husinish; Carnach. L.: Butt of Lewis.

176/3. Vicia Cracca L.
N.U.: By Newton Lodge. N.H.: Husinish.

178/6. Lathyrus pratensis L.
N.U.: South-west of Clachan, near Reumisgarry.

184/11. Spiraea Ulmaria L.
S.H.: Borosdale near Rodel.

185. Rubus fruticosus L., sensu lato.
Specimens yet undetermined critically were collected in: N.U.: Beinn Bhreac; west side of Burrival; Newton (coll. J.W.C.).

189/3. Potentilla Anserina L. (var. vulgaris Hayne).
N.U.: Outer dunes, near Newton. S.H.: Near Seilebost. L.: Butt of Lewis. (W.)

189/3d. Potentilla Anserina L., var. sericea Hayne (var. concolor Wallr.).
N.U.: Dune slack, near Newton; Suenish. (W.)

189/25. Comarum palustre L.
L.: Near Callanish.

190/19. Alchemilla alpina L.
N.H.: Lower rocks of Tomnaval.

190/20. Alchemilla arvensis (L.) Scop.
N.U.: By Newton Lodge; Trumisgarry.

194. Rosa.
A number of roses were collected and have been seen by Colonel Wolley-Dod, who finds some of them to be unlike any he has so far seen in Great Britain. He has named a gathering from S.H.: near Rodel Hotel, "*R canina* L., group *Transitoriae*, var. *spuria* (Pug.) W.-Dod. Most interesting from so far north." Mrs Corstorphine, who saw them afterwards, agrees with this determination and has named the following:—

194/6a. R. canina L., var. lutetiana (Lem.) Baker.
S.H.: Borosdale, near Rodel (petals rose-coloured).

194/20b. R. Sherardi Davies, var. typica W.-Dod.
N.U.: Beinn Bhreac.

194/20c. R. Sherardi, f. pseudomollis W.-Dod.
N.U.: Upper Loch an Armuinn (coll. J.W.C.). "The sepals are not sufficiently appendiculate for typical *Sherardi*, but the curved prickles are against *mollis*."

194/21. R. mollis Sm.
S.H.: Borosdale, near Rodel.
L.: at and between Carloway and Breasclet.
It is hoped that further material may be collected when the plants are fruiting, but good specimens are difficult to obtain as flowers are somewhat infrequent.

195/5. Sorbus aucuparia L.
N.U.: Beinn Bhreac. N.H.: In a gully below Tomnaval.

199/23. Saxifraga stellaris L.
N.H.: Scree slope and rocks below Tomnaval.

211/6. Sedum acre L.
S.H.: Northton.

211/22. Sedum Rhodiola DC.
N.H.: Rocks below Tomnaval.

213/1. Drosera anglica Huds.
N.U.: By Loch Eik. N.H.: Above Loch Langavat (near Husinish). L.: Loch Soval.

213/3. Drosera rotundifolia L.
L.: Loch Soval.

214/1. Hippuris vulgaris L.
N.U.: Loch Veiragvat (coll. J.W.C.).

216/1. Myriophyllum spicatum L.
N.U.: Shallow loch, east of Loch Scarie.

216/2. Myriophyllum alterniflorum DC.
N.U.: Loch a' Chaolais (coll. J.W.C.). L.: Loch by the school, 2 miles south of Carloway. (W.)

217/1. Callitriche stagnalis Scop. sec. Kütz.
N.U.: Near Newton; south west of Clachan, near Reumisgarry.
S.H.: Borosdale, near Rodel. (W.)

217/5. Callitriche intermedia Hoffm. (C. hamulata Kütz.).
N.U.: Newton Lodge; stream between Burrival and Eaval.
L.: Loch by the school, 2 miles south of Carloway. (W.)

218/1. Peplis Portula L.
N.U.: Pond by Newton Lodge.

220/7. Epilobium obscurum Schreb.
N.U.: Roadside bank, near Trumisgarry; near Sponish (det. G. M. Ash).

220/14. Epilobium palustre L.
N.U.: Slopes of Eaval (det. G. M. Ash). N.H.: Carnach (G. M. Ash agrees with this determination).

237/1. Hydrocotyle vulgaris L.
L.: Butt of Lewis.

*254/1. Aegopodium Podagraria L.
N.U.: By Newton Lodge. Although included in *Comital Flora* for v.-c. 110 I have so far found no published record. The following extract from a letter written by W. S. Duncan, dated 18/10/95, included in Herb. Bennett (cover 1686**) is therefore of interest:—"I don't know if you have *Aegopodium Podagraria* recorded for these islands. My first sight of it in Harris was in a garden in the Summer of '94, and a day or two after I saw it in a field at Tarbert. I found it again in the same field a few weeks ago."

256/1. Conopodium majus (Gouan) Loret & Barr.
N.U.: Near Sponish suspension bridge. Specimen collected in fruit, confirming last year's record.

274/1. Angelica sylvestris L.
N.U.: Loch na Morgha (coll. J.W.C.); lower main rocks, north side of Eaval.

282/1. Daucus Carota L.
N.U.: By Newton Lodge.

291/2. Lonicera Periclymenum L.
N.U.: Beinn Bhreae.

296/4. Galium saxatile L.
N.U.: Slopes of Eaval. L.: Roadside, 2 miles south of Carloway.

296/7. Galium palustre L.
N.U.: Near Newton. S.H.: Borosdale, near Rodel. (W.)

296/9. Galium verum L.
S.H.: Nisibost; near Seilebost. L.: Carloway.

301/1. Valeriana officinalis L.
S.H.: Borosdale, near Rodel.

304/1. Valerianella Locusta (L., em.) Betcke.
N.U.: Knoll on Clachan dunes, near Newton. (W.)

312/1. Solidago Virgaurea L.
N.U.: Lower main rocks, north side of Eaval; Beinn Bhreae. N.H.: Lower rocks, Tomnaval. (W.)

314/1. Bellis perennis L.
N.U.: Mobile dunes, near Newton. L.: Butt of Lewis.

318/19e. Aster Tripolium L., var. arcticus Th. Fr.
N.U.: Head of Oban Trumisgarry. "Similar plants are in Herb. Mus. Brit. from E. Ross (Tain: Marshall 1890) and Orkney (Oyce at Firth: Boswell 1880), but others from the same Orkney locality are larger: in addition some from Guernsey are very like the "var. *arcticus*." Transplant experiments are therefore much needed, as although the extreme form looks very remarkable in the field, it may be merely a state due to exposure to oceanic winds." (W.)

326/1. Antennaria dioica (L.) Gaertn.
N.U.: Suenish, near Newton. S.H.: Rudha Romagi (coll. J.W.C.). N.H.: Above Loch Langavat (near Husinish), some with leaves moderately silky-hairy above. L.: Balallan.

365/1. Achillea Millefolium L.
N.U.: Newton (coll. J.W.C.). S.H.: Borosdale, near Rodel. L.: Carloway.

368/4. Anthemis Cotula L.
N.U.: Trumisgarry.

370/1. Chrysanthemum segetum L.
N.U.: Balelone. Very abundant in fields throughout the west side and particularly in this district.

370/4. Chrysanthemum Leucanthemum L.
N.U.: Newton; near Lochmaddy.

371/1. Matricaria inodora L.
N.H.: Carnach. (W.)

378/3. Artemisia vulgaris L.
L.: Carloway.

379/1. Tussilago Farfara L.
N.U.: Newton (coll. J.W.C.).

380/1. Petasites hybridus (L.) G.M.S., em. Fritsch.
L.: Lionel.

383/5. Senecio Jacobaea L.
N.U.: Outer dune, near Newton.

396/9. Cirsium palustre (L.) Scop.
N.U.: Slopes of Eaval.

*405/13. Centaurea Scabiosa L.
N.U.: Newton (coll. J.W.C., det. M.S.C.).

411/1. Lapsana communis L.
N.H.: Carnach.

416/5h. Crepis capillaris L., var. glandulosa Druce (var. anglica Druce & Thellung).
N.U.: Near Newton. L.: Wall top, Carloway. "Druce cites var. *glandulosa* as 'nomen,' but it is not, for the characters are definitely stated. Although without Latin definition, the name is valid by decision of the 1930 International Congress, and must be given preference over that of *anglica*." (W.)

419. Hieracium L.
Many gatherings were made in N.U., S. and N.H. and L., but as the genus is at present undergoing revision, no attempt has been made to list them. When Mr Pugsley is ready I hope to submit them to him for critical determination.

422/2. Leontodon autumnalis L.
N.H.: Scree slope below Tomnaval. L.: Roadside, 2 miles south of Carloway. (W.)

423. Taraxacum Zinn.
"Several forms were collected but cannot yet be named. N.U.: Dunes near Newton; bare sand, Clachan near Reumisgarry. S.H.: Northton. N.H.: Gully of Tomnaval. On the dunes it was almost impossible to find flower or fruit as they had been uniformly eaten off." (W.)

427/2. Sonchus arvensis L.
N.U.: Newton (coll. J.W.C.).

427/3. Sonchus asper Hill.
N.U.: By Newton Lodge.

431/1. Lobelia Dortmanna L.
N.U.: Loch Eik. S.H.: Near Rodel. N.H.: Near Ard an Tolmachain.

435/5. Campanula rotundifolia L.
N.U.: Clachan dunes, near Newton.

438/2. Vaccinium Myrtillus L.
N.U.: Slopes of Eaval. N.H.: Scree slope below Tomnaval; Carnach.

445/1. Calluna vulgaris Hull.
N.H.: Scaladale.

446/2. Erica Tetralix L.
N.U.: Between Beinn Mhor and Beinn Bhreac, with white flowers.

458. Armeria Willd.
"Abundant throughout by the sea, this is the dominant plant of the salt-marshes, and when in flower turns them to sheets of colour. The leaves are generally narrow, the flowers deep-coloured and the calyx glabrous between the ribs, but the last character seems to be inconstant, even on the same stock, head, or calyx (on opposite sides), and long-leaved, broad-leaved, and pale-flowered forms occur." (W.)

460/2. Primula vulgaris Huds.
N.U.: Beinn Bhreac; slopes of Eaval.

466/1. Glaux maritima L.
N.U.: Ahmore Strand; south of Clachan, near Trumisgarry.
L.: Salt marsh near Callanish; Butt of Lewis.

467/2. Anagallis arvensis L.
N.U.: Cultivated field, Scolpaig.

478/1. Erythraea Centaurium Pers.
N.U.: Lingay Strand; Trumisgarry; Suenish, near Newton. S.H.: Borosdale near Rodel. N.H.: Husinish. "The prevailing form is simple stemmed, about 4 in. high, with a single moderately congested capitulum. The basal leaves are not normally unusually large and broad, and the ribs on the base of the calyx and on the pedicels are scabridulous. I cannot separate them into the varieties described by Wheldon & Salmon (*J.B.*, *63*, 345-346, 1925). (W.)

480/9. Gentiana campestris L.
N.U.: Sandy slope, Lingay Strand. S.H.: Traigh Nisabost. N.H.: Husinish. L.: Carloway. (W.)

*497/1b. Symphytum officinale L., var. patens (Sibth.).
N.U.: By Newton Lodge (coll. J.W.C. and later W., who determined it).

501/1. Lycopsis arvensis L.
N.U.: By Newton Lodge.

506/3. Myosotis repens [Don ined.] Rchb.
S.H.: Borosdale, near Rodel; near the sluice by the loch above Rodel hotel. (W.)

506/4. Myosotis caespitosa F. Schultz.
N.U.: Near Newton; Scolpaig; South-west of Clachan, near Reumisgarry. S.H.: Borosdale, near Rodel. N.H.: Tarbert. L.: Swanibost; roadside ditch near Carloway; Lionel. (W.)

The specimen from "N.U.: Newton, marsh below garden," listed last year as *M. repens*, has been referred to *M. caespitosa* by Mr A. E. Wade.

506/8. Myosotis arvensis (L.) Hill.
N.U.: Balelone; outer dunes, near Newton. (W.)

506/10. Myosotis versicolor Sm.
N.U.: By Newton Lodge. S.H.: Near the sluice by the loch above Rodel hotel. N.H.: Carnach (coll. F.D.). L.: Carloway.

*†537/1. Mimulus guttatus DC., var.
L.: Lionel, in some quantity by the side of a small burn. The corolla lobes were a rich bronze colour, flowers large (coll. M.S.C., det. W.).

541/1. Digitalis purpurea L.
N.U.: Slope below lower main rocks, north side of Eaval; scarce on west side of Burrival.

543/3. Veronica officinalis L.
N.U.: Slopes of Burrival; near Grenetote, towards Geireann. N.H.: Slopes below Tomnaval. L.: Roadside, 2 miles south of Carloway.

543/4. Veronica Chamaedrys L.
N.U.: By Newton Lodge.

543/6. Veronica scutellata L.
L.: Loch Soval; roadside near Carloway.

543/8. Veronica Anagallis-aquatica L.
N.U.: Ditch, near Newton. L.: Swanibost. (W.)

543/11. Veronica serpyllifolia L.
S.H.: Near Rodel.

543/15. Veronica arvensis L.
N.U.: By Newton Lodge. S.H.: Wall, Rodel.

545. Euphrasia L.
All gatherings have been submitted to Mr Pugsley who has named or confirmed the following:—

545/3. Euphrasia brevipila Burn. & Grem.
S.H.: Near Rodel; Borosdale. L.: Carloway.

545/3b. Euphrasia brevipila Burn. & Grem., f. subeglandulosa Bucknall.
S.H.: Traigh Nisabost.

545/5c. Euphrasia nemorosa Löhr, var. sabulicola Pugsl.
N.U.: Fixed dune, near Newton.

545/13. Euphrasia foulaensis Towns.
L.: Butt of Lewis.

545/15. Euphrasia micrantha Rchb.
N.U.: Alioter (W., "Yes, with very small flowers," H.W.P.). S.H.: Near Rodel (W., "Yes, very untypical," H.W.P.). N.H.: Scaladale.

Specimens from N.U.: Near Lochmaddy; by Loch Eik; Clachan dunes, near Trumisgarry. N.H.: Carnach. L.: Near Callanish; near Carloway are probably *E. brevipila* B. & G. A gathering from L.: Lionel "looks like *E. Marshallii* Pugsl. but is too young for certainty," and another from L.: Near Callanish, is possibly *E. foulaensis* Towns.

547/1. Pedicularis palustris L.
N.U.: By Loch Eik. L.: Lionel; roadside near Carloway.

547/2. Pedicularis sylvatica L.
N.U.: West side of Burrival. L.: Butt of Lewis.

548/3. Rhinanthus minor Ehrh.
N.U.: By Newton Ferry; Scolpaig. L.: Lionel. (W.)

548/5. Rhinanthus stenophyllus (Schur) Druce.
N.U.: South-west of Clachan, near Reumisgarry—"rigid and brittle: flowers quite yellow: stems vittate;" Scolpaig. S.H.: Church ridge, Rodel—"some with yellow calices but plant with some anthocyan; others with redder calyx." N.H.: Carnach; Husinish—"leaves more like *R. minor*, but intercalary leaves 1 or 2." L.: Carloway; near Callanish; near Breasclete. (W.)

548/6. Rhinanthus monticola (Sterneck) Marshall.
N.U.: Margin of dune slack, near Newton. (W.)

552/4. Utricularia "ochroleuca" auct. angl.
N.H.: Scaladale; near Ard an Tolmachain (coll. J.W.C.). (W.)

552/5. Utricularia minor L.
N.H.: Near Ard an Tolmachain (coll. J.W.C.). L.: Aird an Troim. (W.)

553/4. Pinguicula lusitanica L.
N.U.: Near Newton, towards Beinn Bhreac; edge of Ahmore Strand (coll. J.W.C.); west side of Burrival. S.H.: Near Rodel.

*558/2. Mentha alopecuroides Hull.
N.U.: Boreray (coll. J.W.C., det. A. L. Still).

558/7. Mentha aquatica L.
N.U.: Dune slack, near Newton. (W.) Mr Still agrees with the determination.

561/4. Thymus Serpyllum L.
"The forms of this aggregate species are inadequately described by Ronniger (*B.E.C. 1923 Rep.*), and the mere use of the key brings together diverse looking plants and separates others more similar. The specimens to which he has himself given the same name are often extraordinarily diverse, and to my eyes, clearly not belonging to the same 'species.' I, therefore, cannot with any certainty identify the series collected in the Outer Hebrides, but so far as I can at present deal with them, they may be:—

561/5. Thymus pycnotrichus Uechtr.
N.U.: Outer dunes near Newton.

561/9. Thymus zetlandicus Ronn. & Druce.
N.U.: Scolpaig. S.H.: Rodel: "variable, some specimens weak or a different form." A small white-flowered specimen from Rudha Romagi (coll. J.W.C.) may also belong here (or to *Drucei*).

561/10. Thymus neglectus Ronn.
S.H.: Northton; Borosdale, near Rodel.

561/11. Thymus britannicus Ronn.
N.U.: Alioter. N.H.: Husinish. L.: Carloway; Butt of Lewis." (W.)

572/2. Scutellaria minor Huds.
N.U.: Loch na Morgha (coll. J.W.C.). L.: Loch Soval.

573/1. Prunella vulgaris L.
L.: Butt of Lewis.

577/5. Stachys palustris L.
N.H.: Near Carnach. (W.)

578/2. Galeopsis Tetrahit L.
N.U.: Trumisgarry. L.: Carloway.

581/3. Lamium purpureum L.
N.U.: By Newton Lodge.

581/4. Lamium hybridum Vill.
N.U.: By Newton Lodge. (W.)

581/5. Lamium moluccellifolium Fr.
N.H.: Near Carnach. (W.)

581/6. Lamium amplexicaule L.
N.U.: Drive, Newton Lodge.

586/1. Teucrium Scorodonia L.
S.H.: Borosdale, near Rodel.

588/3. Plantago Coronopus L.
S.H.: Salting, Northton. L.: Butt of Lewis.

588/5. Plantago maritima L.
L.: Butt of Lewis.

588/8. Plantago lanceolata L.
N.U.: Semi-fixed dunes, near Newton.

588/10. Plantago major L.
N.U.: By Newton Lodge.

589/1. Littorella uniflora (L.) Asch.
N.U.: Near Burrival.

600/8. Chenopodium album L.
N.U.: By Newton Lodge. (W.)

606/7. Atriplex glabriuscula Edmondst.
L.: Near Callanish.

611. Salicornia L.
L.: Salt marsh, near Callanish: too young to determine.

*611/7. Salicornia gracillima (Towns.) Moss.
N.U.: Ahmore Strand (coll. J.W.C., det. W. & M.S.C.)

615/2. Polygonum Convolvulus L.
S.H.: Weed in the hotel garden, Rodel. (W.)

615/5. Polygonum amphibium L.
N.U.: Loch a' Chaolais.

615/7. Polygonum Persicaria L.
L.: Carloway.

617/1. Oxyria digyna (L.) Hill.
N.H.: Below Tomnaval.

618/3. Rumex crispus L.
N.U.: Lingay Strand.

618/6. Rumex obtusifolius L.
S.H.: Near Rodel. (W.)

618/14. Rumex Acetosa L.
N.U.: Wet rocks, Beinn Bhreac.

618/16. Rumex Acetosella L.
S.H.: Borosdale, near Rodel.

641/1. Myrica Gale L.
L.: Loch Soval.

650/9. Salix aurita L.
S.H.: Borosdale, near Rodel. (W.)

650/11. Salix "arenaria-repens" Floderus.
S.H.: Borosdale, near Rodel: on a maritime rock face, a most peculiar straggling bush. L.: Butt of Lewis. (W.)

*650/13. Salix phylicifolia L.
N.H.: Streamside by the bridge, Scaladale (coll. and det. W.)

651/2. Populus tremula L.
N.U.: Lower rocks, north side of Eaval.

652/1. Empetrum nigrum L.
N.U.: Alioter; west side of Burrival; rocks by shore, Loch Eport.

663/1. Listera ovata (L.) R. Br.
N.U.: South-west of Clachan, near Reumisgarry. N.H.: Husinish.

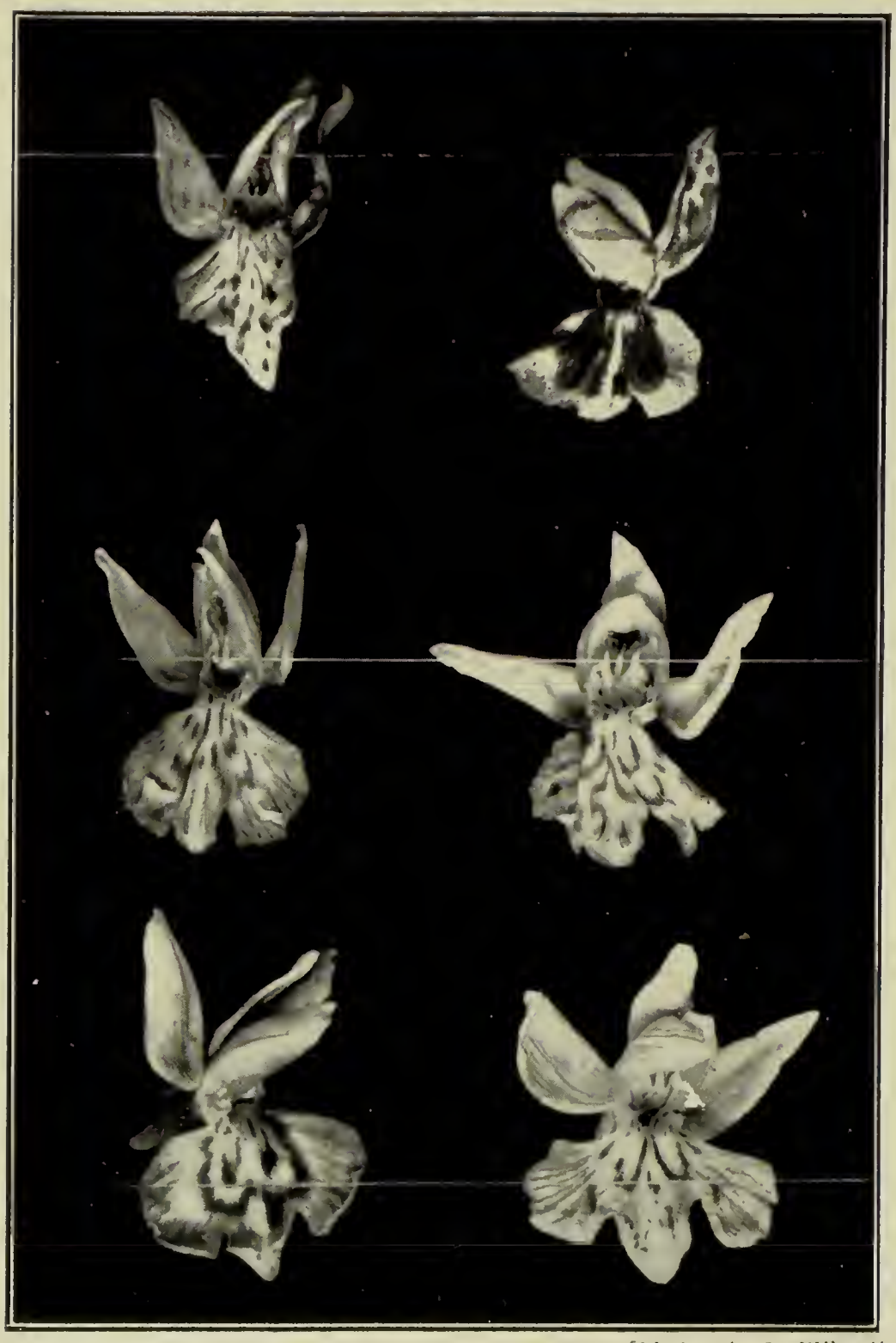
663/2. Listera cordata (L.) R. Br.
N.U.: At the foot and on slopes of Eaval. N.H.: Slopes below Tomnaval.

669. Orchis L.
"Marsh Orchids were again particularly studied (and photographed), and except for two peculiar series observed in N.U.: South of Clachan (Reumisgarry) and L.: near Lionel, they were straightforward.

669/7. Orchis latifolia L. (sec. Pugsl.), var. coccinea Pugsl.
This is the only form of the species observed, and it is possible that the paler-coloured plant seen last year at N.U.: Scolpaig, was merely a faded specimen of this same variety. It seems somewhat less abundant than *O. purpurella* in Harris and Lewis. N.U.: Clachan (Reumisgarry). S.H.: Borve (F.D., fine specimens, probably what Dr Druce recorded—*B.E.C. 1928 Rep.*, 760 (1929)—as *O. incarnata*, var. *pulchrior*). N.H.: Husinish (Dr Druce records vars. *pulchrior* and *dunensis*). L.: Lionel.

O. elodes × *latifolia*, var. *coccinea*, occurs with the parents at S.H.: Husinish.

669/9. Orchis purpurella T. & T. A. Stephenson.
N.U.: Scattered throughout, often abundant. S.H.: Borosdale, near Rodel (W.); Leverburgh; seen at Borve (no doubt *O. praetermissa* Druce, *B.E.C. 1928 Rep.*, 760). N.H.: Near Tarbert (coll. J.W.C. and M.S.C.); Carnach; Husinish (i.e. *O. praeter-*



[*Photo. A. J. Wilmott.*

FLOWERS OF ORCHIDS FROM LIONEL, LEWIS.

Six flowers from different marsh orchids collected at Lionel, Lewis (× *c.* 3. the lines 2 cm. apart). The top right flower was at the time thought to be *O. latifolia*, var. *coccinea* × *O. purpurella*, the dark crimson blotch coming from the former and the rich purple ground colour from the latter but no *O. purpurella* was observed there. The remainder may be hybrid forms, *O. occidentalis* and *O. elodes* being other parents. The bottom right flower was at the time thought to be *O maculata* (*Fuchsii*), but there is no certain record of that plant for the Outer Isles and it is possibly *O. elodes* × *occidentalis*.

missa and var. *pulchella* Druce, *B.E.C. 1928 Rep.*, 760). L.: Balallan (coll. J.W.C. and M.S.C.); Carloway; Breasclete.

No attempt was made to separate the var. *pulchella* (Druce) Pugsley.

669/9(2). Orchis occidentalis (Pugsley) Willmott, comb. nov.
N.U.: Clachan (Reumisgarry): larger and more typical than on the Newton sandhills, and nearly over when the other marsh orchids were in good condition. The range of leaf markings varied exactly as in the Irish plants.

669/10. Orchis elodes Griseb.
Widespread and general. N.U.: A peculiar plant near Burrival had bright pink (lined) flowers and reddish leaf spots and dots. S.H.: Leverburgh. N.H.: Near Tarbert (coll. J.W.C. and M.S.C.); Meavaig (coll. J.W.C.). L.: Observed near Carloway, and noted as "not observed to-day on the moors" between there and Stornoway; and cf. hybrids with *O. purpurella*.

× O. formosa T. & T. A. Stephenson (*O. elodes* × *purpurella*). This hybrid is frequent where the two parents grow together. N.U.: Near Newton Ferry; Clachan (Reumisgarry); Ahmore; Scolpaig. S.H.: Borosdale, near Rodel; Leverburgh (no doubt the *O. maculata* × *praetermissa*, Druce, 1928, from O.H.; Borve; Husinish, etc.). N.H.: Near Tarbert (coll. J.W.C. and M.S.C.); Carnach; above Loch Laugavat and near Amhuinnsuidh (a tall form unlike any of the others). L.: Near Callanish; Carloway; also observed at Breasclete.

Two difficult series were observed. The first was sent me from L.: Lionel (coll. M.S.C.), which was at the time divided into four parts (A-D). (A) were *O. latifolia*, var. *coccinea*; (B) had leaf markings of *O.* "*Fuchsii*" and a fairly trifid labellum, but the labellum had broad lateral lobes with crenate margin, and since no definite record for *O.* "*Fuchsii*" appears to exist for the Islands, the identification is doubtful; (C) were taken to be (B) × *O. purpurella*; (D) was a singleton most remarkable form taken to be (A) × (C), the whole basal half of the labellum being a rich blackish magenta, as if the *coccinea* colour had been superposed on the purple basic colour over an area equal to its smaller size. Since no *O. purpurella* was noted, however, it now seems possible that (C) may have been *O. occidentalis*, while (B) was (A) × (C). Further field observation is needed to disentangle these.

The second difficult series is that spread over marshy fields in N.U.: Clachan (Reumisgarry). Here may be found *O. elodes*, *O. latifolia*, var. *coccinea*, *O. occidentalis*, and *O. purpurella*. Hybrids were clearly abundant, especially *elodes* × *purpurella*, but others which seemed recognisable were hybrids of *latifolia*, var. *coccinea* with *O. elodes*, *O. purpurella*, and *O. occidentalis*; and hybrids of *O. occidentalis* with *O. elodes* and *O. purpurella*. These also require study again in the field." (W.)

669/14. Orchis mascula L.

N.U.: On a dry bank above the Goulaby burn, near Newton (coll. J.W.C.).

674/4. Coeloglossum viride (L.) Hartm.

N.U.: Dunes, near Newton; Suenish; south of Clachan, near Reumisgarry. S.H.: Church ridge, Rodel. N.H.: Husinish.

"'*Habenaria viridis*, var. *bracteata* A. Gray' was recorded by Bennett on Shoolbred specimens from N.U.: Newton, but the species is extremely variable there and near Clachan (Reumisgarry). The individuals with larger more conspicuous bracts are not the true *C. bracteatum* (Willd.) Parl., which is a plant of Eastern North America reaching Eastern Asia and Japan. Prof. Fernald (1926: *Rhodora*, *28*, 172) distinguishes these large-bracted European forms as var. *Vaillantii* (Ten.) Fernald, '*Hab. bracteata* of European authors, not *Orchis bracteata* Muhl.),' and Dr Druce's record [*B.E.C. 1928 Rep.*, 761 (1929)] of 'var. *Vaillantii*' from N.H.: Husinish, is no doubt meant to refer to the same form, for on the sandhills and slacks there we found the same range of variation as at Newton, plants tiny to large, flowers greener or browner (or reddish), spikes large or small, dense to lax, bracts smaller to larger and conspicuous. The middle lobe of the labellum is always present, and the lateral lobes vary somewhat in length and breadth. But there is nothing to match Tenore's original description, the chief point of which is that the labellum is dilated and trifid, as figured by Vaillant, not linear and tridentate. Prof. Fernald adds that he had not seen the original description: that being so he should not have made a comb. nov., for his misuse of the epithet, which should apply to Tenore's plant, creates difficulty. Whether our extreme plants should be called var. *macrobracteata* (Schur), which Fernald cites as synonym, is also doubtful, for that is described (Schur, *Enum. Transs.*, 645) as 10 to 15 inches high . . . spike dense, 2-3 inches, flowers yellowish-green, bracts leafy, three times as long as the flowers: our plants do not agree with this." (W.)

674/7. Platanthera bifolia (L.) Rchb.

N.U.: Near Ahmore. S.H.: Near Borve. N.H.: Meavaig (coll. J.W.C.); above Loch Langavat, near Husinish.

702/6. Allium ursinum L.

N.U.: Beinn Bhreac; stream bed, north side of Eaval.

706/1. Scilla verna Huds.

L.: West of the lighthouse, Butt of Lewis.

714/1. Narthecium ossifragum Huds.

L.: Kintaravay.

718/4. Juncus effusus L., em. Koch.

Only observed once. N.H.: near Bunavenéadar. (W.)

718/4b. Juncus effusus L., em. Koch, var. compactus Lej. & Court.
The widespread form: N.U.: Newton; by Loch Eik. L.: Stornoway. (W.)

718/6. Juncus balticus Willd.
N.U.: South-west of Clachan, near Reumisgarry. L.: Lionel.

718/10. Juncus lampocarpus Davies.
N.H.: Above Loch Langavat, near Husinish. (W.)

718/12. Juncus bulbosus L.
N.U.: Loch an Armuinn (coll. J.W.C.); near Grenetote, towards Geireann.

718/15. Juncus Gerardi Lois.
S.H.: Borosdale, near Rodel. This was noted last year when very young as ? *J. tenuis* Willd. More mature specimens collected in 1937 show it to be a peculiar form of *J. Gerardi* Lois. It has not yet been possible to obtain further specimens of the Benbecula plant. L.: Salt marsh, near Callanish; Butt of Lewis; Carloway.
"Var. salsuginosus Regel ex Lindeb." N.U.: South of Clachan, near Reumisgarry. S.H.: Bare wet sand, Northton. See Arthur Bennett in *A.S.N.H.*, 1910, p. 234.

718/17. Juncus bufonius L.
L.: Balallan; edge of salt marsh, near Callanish.

719/1. Luzula sylvatica (Huds.) Gaud.
N.U.: Slopes of Eaval.

719/4. Luzula multiflora (Retz.) Lej.
N.U.: Suenish, near Newton. N.H.: Bunaveneadar. L.: Loch Soval. (W.)

719/6. Luzula campestris (L.) DC., em. Lej.
N.U.: Clachan dunes, near Trumisgarry. S.H.: Borosdale, near Rodel. L.: Carloway; near Callanish. (W.)

722/3. Sparganium simplex Huds.
L.: Loch by school, 2 miles south of Carloway. (W., H.W.P. agrees.)

735/1. Triglochin maritimum L.
N.U.: South-west of Clachan, near Reumisgarry. S.H.: Bare wet sand, Northton. (W.)

735/2. Triglochin palustre L.
S.H.: Borosdale, near Rodel. N.H.: Husinish. L.: Salt marsh, near Callanish; Loch Soval. (W.)

737/1. Potamogeton natans L.
N.U.: Loch Veiragvat and Loch a' Chaolais (coll. J.W.C.); Scolpaig.

737/2. Potamogeton polygonifolius Pourr.
N.U.: Stream from north side of Eaval; by stream above Newton towards Beinn Bhreac. (Also a peculiar long and narrow leaved form in a deep shaded pool.) L.: Loch Soval. (W.)

737/9. Potamogeton gramineus L.
N.U.: Scolpaig. (W., J.E.D. agrees.)

737/23. Potamogeton Berchtoldii Fieb. (P. pusillus auct. non L.).
L.: Loch by the school, 2 miles south of Carloway. (J.E.D. and G. Taylor.) *P. pusillus* L. is included for v.-c. 110 in "Comital Flora," "Glasgow Catalogue," 1899, and "Supplement to Topographical Botany," 1906, but the only records for this species that I have so far traced are those made by Ar. Bennett in *Scot. Nat.*, 1891, p. 189: "(records by Mr W. S. Duncan) . . . Potamogeton pusillus, Scarp. *sp.*" and in *A.S.N.H.*, 1892, p. 62: N.H.: Scarp, W. S. Duncan. But Bennett's note a year later (*A.S.N.H.*, 1893, p. 101) seems to have escaped notice:—"110. Outer Hebrides. 1891 *Report*. Delete the following as on record, viz.: . . . Potamogeton pusillus." Duncan's specimen from Scarp dated "Autumn, 1890," sent to Bennett as "*P. obtusifolius* ?," placed by Bennett with *P. pusillus* (Bennett's No. 1274) is, however, in Herb. Bennett and Messrs Dandy and Taylor determine it as *P. Berchtoldii* Fieb.—i.e. *P. pusillus* auct.

737/28. Potamogeton pectinatus L.
N.U.: Dead Man's Loch (coll. J.W.C.). (J.E.D.)

737/30. Potamogeton filiformis Pers.
N.U.: Shallow loch east of Loch Scarie. (W., J.E.D. agrees.)

738/1. Ruppia spiralis L., ex. Dum.
N.U.: Loch an Duin, in considerable quantity (coll. J.W.C.: flower, W.: fruit). (W., J.E.D. agrees.)

740/1. Zostera marina L.
N.U.: Loch an Duin (coll. J.W.C.).

745/3. Eleocharis multicaulis Sm.
N.U.: Loch Eik. N.H.: Scaladale.

746/4. Scirpus Tabernaemontani Gm.
N.U.: Loch Veiragvat (coll. J.W.C.).

746/7. Scirpus caespitosus L.
N.U.: Burrival (coll. J.W.C.); north of Eaval.

746/8. Scirpus pauciflorus Lightf.
N.U.: near Newton, towards Beinn Bhreac. L.: Loch Soval.

746/13. Scirpus fluitans L.
N.U.: Near Grenetote, towards Geireann. S.H.: Loch near Rodel. L.: Loch Soval.

746/15. Blysmus rufus (Huds.) Link.
S.H.: Borosdale, near Rodel. L.: Salt marsh, near Callanish.

*747/1. Eriophorum latifolium Hoppe.
N.H.: Above Loch Langavat (coll. and det. M.S.C., W. agrees.)

747/2. Eriophorum angustifolium Roth.
N.U.: Above Newton, towards Beinn Bhreac. N.H.: Above Loch Langavat; Tarbert (coll. F.D.); Bunaveneadar. (W.)

747/4. Eriophorum vaginatum L.
N.H.: Above Loch Langavat; Sealadale. L.: Loch Soval.

748/2. Rhynchospora alba Vahl.
N.U.: Bog, north foot of Eaval. N.H.: Sealadale; above Loch Langavat. L.: Aird an Troim.

749/1. Schoenus nigricans L.
N.U.: Loch na Morgha and near Burrival (coll. J.W.C.); by stream north side of Eaval. L.: Kintaravay.

753/7. Carex rostrata Stokes in With. [wrong authority given in last year's list].
N.U.: Loch na Creige. L.: Loch Soval; Kintaravay.

*753/8. Carex lasiocarpa Ehrh.
N.U.: Loch na Creige (coll. and det. M.S.C.); Loch na Morgha (coll. J.W.C., det. W.).

753/15. Carex binervis Sm.
N.U.: Slopes of Burrival; by Loch Eik. N.H.: Below Tomnaval; above Loch Langavat; Tarbert (coll. F.D.). "*Carex Sadleri*, which has been recorded from various localities in N.U., seems to be identical with *C. binervis* except in the shape of its perigynia, and is presumably merely a form of that species. The shape of the perigynia seems to vary between that normal for *C. binervis* and the extreme narrowness and length of those of *C. Sadleri*. Some specimens from Sealadale are intermediate in character." (W.)

753/19. Carex Hostiana DC.
N.U.: Near Claehan, by Reumisgarry; main lower rocks, north side of Eaval. S.H.: Borosdale, near Rodel. N.H.: Above Loch Langavat; slopes below Tomnaval. (W.)

753/20. Carex flava L.
N.U.: Ahmore Strand; near Grenetote, towards Geireann. S.H.: Near Rodel; Borosdale, near Rodel. N.H.: Sealadale; above Loch Langavat; Husinish.

753/20c. Carex flava L., var. minor Towns.
N.U.: Burrival. L.: Butt of Lewis. (W.)

753/33. Carex flacca Schreb.
N.U.: Beinn Bhreac. S.H.: Borosdale and near Rodel. (W.)

753/36. Carex panicea L.
N.U.: Scolpaig. S.H.: Borosdale. N.H.: Above Loch Langavat. (W.)

753/38. Carex limosa L.
N.H.: Sealadale. L.: Aird an Troim.

753/49. Carex Goodenowii Gay.
Specimens showing considerable variation were collected in a number of localities in N.U., S. and N.H., and L.

753/49m. [=753/44e.] Carex Goodenowii Gay, var. hebridensis (Ar. Benn.) Wilmott, in *Journ. Bot.*, *76*, pp. 137-141, 1938.
"The original locality, in which Duncan found the plant named

C. spiculosa, f. *hebridense*, by Bennett, is fully described in one of Duncan's letters, and a small area of turf agreeing with Duncan's description was searched. It bore a narrow-glumed form of *C. Goodenowii* which matched Duncan's form except that most of the glumes were obtuse or obtusish, and only a few at the base of the spike were acute as in Duncan's plant. At the time I thought that it would prove identical with Duncan's specimens in Herb. Bennett, but since there is this slight difference the area needs yet another visit before it can be stated whether the var. *hebridensis* still exists or has died out. I am, however, quite satisfied that the suggestion of any influence of *C. salina* Wahl. is entirely unfounded." (W.)

753/53. CAREX LEPORINA L.
S.H.: Borosdale, near Rodel; Leverburgh. N.H.: Carnach. L.: Roadside near Carloway, east of Loch an Duin; by the Standing Stones, Callanish; Loch Soval.

753/56. CAREX STELLULATA Good.
S.H.: Near Rodel. N.H.: Above Loch Langavat. L.: Loch Soval; by loch opposite school, 2 miles south of Carloway.

753/67. CAREX ARENARIA L.
N.U.: Outer dunes, near Newton. S.H.: Near Seilebost.

753/74. CAREX PULICARIS L.
N.U.: Suenish, near Newton; rocks, north side of Eaval. S.H.: Borosdale, near Rodel. N.H.: Above Loch Langavat. L.: Loch Soval.

753/74b. CAREX PULICARIS L., f. MONTANA Pugsl.
S.H.: Borosdale, near Rodel (coll. F.D.). (W., Mr Pugsley agrees.)

753/75. CAREX DIOICA L.
N.U.: Slopes of Burrival; stream bed, north side of Eaval; above Newton, towards Beinn Bhreac. N.H.: Above Loch Langavat.

766/1. ANTHOXANTHUM ODORATUM L.
N.H.: Bunaveneadar.

770/5. ALOPECURUS GENICULATUS L.
N.U.: Near Newton. L.: Lionel.

780/2f. AGROSTIS STOLONIFERA L., var. STOLONIFERA (L.) Koch.
S.H.: Bare wet sand, Northton. N.H.: Husinish. (W.R.P.)

780/3. AGROSTIS TENUIS Sibth.
N.H.: Carnach. The following were infected with *Tilletia decipiens* (*A. pumila* L.): N.U.: Near Grenetote, towards Geireann; near Lochmaddy. L.: Roadside near Carloway, opposite Loch an Duin. (W.R.P.)

780/6. AGROSTIS CANINA L.
N.U.: By Newton Lodge (coll. F.D.); in several localities near Eaval. S.H.: Borosdale, near Rodel. L.: near Carloway. (W.R.P.)

Var. ARIDA Schlecht.
N.U.: Roadside bank by Loch Eik. N.H.: Bunaveneadar. (W.R.P.)

787/1. AMMOPHILA ARENARIA (L.) Link.
N.H.: Husinish.

789/1. AIRA CARYOPHYLLEA L.
N.U.: Near Lochmaddy; sandy slope, Lingay Strand.

789/2. AIRA PRAECOX L.
N.U.: By Newton Lodge (coll. F.D.). S.H.: Rodel. L.: Carloway.

791/4. DESCHAMPSIA FLEXUOSA (L.) Trin.
N.U.: Alioter. S.H.: Borosdale, near Rodel. N.H.: Sealadale.

792/2. HOLCUS LANATUS L.
N.U.: Slopes of Eaval; roadside by Loch Eik; near Newton. N.H.: Husinish.
The two following are an albino form: N.U.: Trumisgarry; near Burrival (coll. J.W.C.).

794/2. AVENA PUBESCENS Huds.
N.U.: Snenish, near Newton. (W.)

795/1. ARRHENATHERUM ELATIUS (L.) M. & K.
N.U.: By Newton Lodge.

800/1. SIEGLINGIA DECUMBENS Bernh.
N.U.: Fixed dune, near Newton; sandy slope by Lingay Strand. L.: Near Callanish.

802/1. PHRAGMITES COMMUNIS Trin.
N.U.: Lochs Hungavat and Veiragvat (J.W.C.); Lochs Eik and Fada. (W.)

809/3. KOELERIA GRACILIS Pers., ssp. BRITANNICA Domin.
N.U.: Fixed dune, near Newton; dry bank, Scolpaig; Trumisgarry. S.H.: Borosdale, near Rodel. N.H.: Husinish; Carnach. L.: Lionel. "The upper part of the stem is pubescent in all, but in a few the stem is glabrous or glabrescent towards or near the base. The pubescence on the pale varies in length, mostly it is short and close (puberulous) but in others longer and spreading in the upper half or only nearer the apex. Yet all appear to belong under subsp. *britannica* rather than subsp. *typica* or *K. albescens* DC." (W.)

813/1. MOLINIA CAERULEA (L.) Moench.
N.U.: Scolpaig. L.: Lionel.

814/1. CATABROSA AQUATICA (L.) Beauv.
N.U.: Near Newton. (W.)

820/1. CATAPODIUM LOLIACEUM (Huds.) Link.
N.U.: Clachan dunes, near Newton.

824/2. POA PRATENSIS L.
N.U.: Near Newton Ferry. S.H.: Borosdale, near Rodel. (W.)

824/3. Poa pratensis L., var. subcaerulea (Sm.).
N.U.: Clachan dunes and fixed dune near Newton. N.H.: Husinish. (W.)

824/6. Poa trivialis L.
S.H.: Borosdale, near Rodel. N.H.: Carnach. (W.)

824/14. Poa annua L.
N.U.: Col between Beinn Bhreac and Beinn Mhor. "Light yellow green: making conspicuous flat circles on bare peat." (W.)

825/2. Glyceria fluitans (L.) R. Br.
N.U.: By Newton Lodge. S.H.: Nisabost. N.H.: Near Carnach. L.: Carloway; Balallan. (W.)

825/5. Puccinellia maritima (Huds.) Parl.
S.H.: Borosdale, near Rodel. L.: Salt marsh, near Callanish (det. J. E. Lousley).

826/7. Festuca rubra L., subsp. genuina, var. vulgaris (Hack.) How.
N.U.: Beinn Bhreac (det. W. O. Howarth).

826/7e. Festuca rubra L., var. glaucescens (Heg. & Heer) How.
N.U.: Beinn Bhreac; outer dunes, near Newton. N.H.: Scaladale; Husinish (det. W. O. Howarth).

The specimens listed last year from N.U.: Newton; Crogary More have been similarily determined by Dr Howarth.

826/9. Festuca ovina L.
N.H.: Carnach. (W.)

826/10b. Festuca vivipara (L.) Sm.
N.U.: Rocks, north side of Eaval; edge of Ahmore Strand (coll. J.W.C.). S.H.: Borosdale, near Rodel. N.H.: Scaladale; above Loch Langavat; Carnach. (W.)

827/19. Bromus mollis L.
N.U.: Newton. N.H.: Near Carnach. (W.)

830/1. Agropyron junceum (L.) Beauv.
N.U.: Lingay Strand. N.H.: Husinish. (W.)

839. Juniperus L.
"It is clear from the few specimens collected in N.U. and S.H. that the forms in the Islands need serious collection and study." (W.)

844/2. Equisetum arvense L.
N.U.: Newton (coll. J.W.C.). (A.H.G.A.)

844/3. Equisetum sylvaticum L.
N.H.: Scaladale; near Ardvourlie. (A.H.G.A.)

844/5. Equisetum fluviatile L.
N.U.: Scolpaig; south-west of Clachan, near Reumisgarry. S.H.: Nisibost. (A.H.G.A.)

844/6. Equisetum palustre L.
N.U.: South-west of Clachan, near Reumisgarry. L.: Salt marsh, near Callanish. (A.H.G.A.)

851/1. Asplenium marinum L.
N.U.: West side of Burrival.

851/2. Asplenium Trichomanes L.
S.H.: Borosdale, near Rodel (coll. F.D.). N.H.: Rocks below Tomnaval (coll. F.D.).

*851/3. Asplenium viride Huds.
N.H.: Lower rocks, Tomnaval (coll. and det. F.D.).

851/5. Asplenium Adiantum-nigrum L.
N.U.: West side of Burrival; slopes of Eaval. S.H.: Borosdale, near Rodel (coll. F.D.). L.: Carloway; near Breasclete.

853/1. Athyrium Filix-foemina (L.) Roth.
N.U.: Slopes of Burrival; Beinn Bhreac. S.H.: Near Rodel. L.: By the river, Carloway. (A.H.G.A.)

856/4. Dryopteris dilatata (Hoffm.) A. Gray.
N.U.: West side of Burrival; lower main rocks, north side of Eaval; Beinn Bhreac. N.H.: Carnach. (A.H.G.A.)

856/5. Dryopteris aemula (Ait.) O. Ktze.
N.U.: North foot, Eaval. (W.)

856/7. Dryopteris Oreopteris (Ehrh.) Maxon.
N.U.: Beinn Bhreac (A.H.G.A.); north foot, Eaval. N.H.: Scree slope below Tomnaval.

856/9. Dryopteris Phegopteris (L.) C. Chr.
N.U.: Lower main rocks, north side of Eaval. N.H.: Lower rocks, Tomnaval.

857/4. Cystopteris fragilis (L.) Bernh.
N.H.: Lower rocks, Tomnaval. (A.H.G.A.)

858/1. Polypodium vulgare L.
N.U.: Beinn Bhreac; Alioter. S.H.: Borosdale, near Rodel.

863/2. Hymenophyllum peltatum Desv.
N.U.: Lower main rocks, north side of Eaval. N.H.: Tomnaval. (A.H.G.A.)

864/1. Osmunda regalis L.
N.U.: Hungavat; roadside between Clachan Burrival and Drimseidinish (both coll. J.W.C., who also saw plants at Loch an Tomain). L.: By the river, Carloway.

865/1. Botrychium Lunaria (L.) Sm.
N.U.: Suenish, and sandy slope Lingay Strand, near Newton; Clachan, near Reumisgarry; Scolpaig.

866/1. Ophioglossum vulgatum L.
N.U.: Sandy slope, Lingay Strand; Clachan dunes, near Reumisgarry.

870/7. Lycopodium Selago L.
N.H.: Rocks below Tomnaval; Tarbert.

871/1. Selaginella Selaginoides (L.) Link.
S.H.: Rodel. N.H.: Slope below Tomnaval. L.: Butt of Lewis.

872/5. Nitella translucens Ag.
L.: Loch by the school, 2 miles south of Carloway. (G. O. Allen.)

876/5. Chara hispida L.
N.U.: Loch a' Chaolais (coll. J.W.C.). (G. O. Allen.)

Records, previous to 1932, unconfirmed or not included in G. C. Druce's *Comital Flora*. (Only the earliest records so far traced are given.)

104/1. Spergula arvensis L. em. Rchb.
Outer Hebrides, W. Macgillivray, 1830, ii, 94.

368/4. Anthemis Cotula L.
N.U.: "Sandy meadows west side," Shoolbred, 1895, 242.

722/3. Sparganium simplex Huds.
Outer Hebrides, Macgillivray, 1830, ii, 92.

738/1. Ruppia spiralis L., ex. Dum.
"*Ruppia maritima*" was recorded—as collected in 1841—by Balfour and Babington, 1842, *Ann. and Mag. Nat. Hist.*, viii, 541. The name may have been used only in a general sense as was done by Shoolbred (1895, 247). Since, however, the plant should have been in fruit when they were there (August) and Babington in 1843 (*Manual*, p. 326) separates *R. maritima* from *R. rostellata*, it is probable that any specimens which they collected will be found to be *R. spiralis* L., ex. Dum.

856/9. Dryopteris Phegopteris (L.) C. Chr.
Harris and Scarp, Bennett (coll. W. S. Duncan), 1892, p. 63, as *Phegopteris polypodioides* Fée.

NOTES ON SOME ALDERNEY PLANTS.

J. D. Grose.

The chief work on the Botany of Alderney is E. D. Marquand's *Flora of Guernsey and the Lesser Channel Islands*, published in 1901. Marquand spent two summers on the island, and his list is remarkably complete and accurate. A *Supplement to the Flora* was edited by Mrs McCrae and published in the *Transactions of the Guernsey Society* in 1923. The *Supplement* is largely a collection of scattered records from various sources, and (as far as Alderney is concerned) localities are not given. From 1923 to 1936 I have been able to trace only five isolated records in the B.E.C. Reports, but there have been two valuable articles in the *Journal of Botany* (*71*, 106 (1933) and *75*, 299 (1937)) by Messrs A. B. and A. K. Jackson and H. K. Airy-Shaw. Several very interesting species were here recorded for the first time.

In June 1937 a week was spent at Alderney, and many of the rarer plants were seen in the localities given by Marquand. A few new records were made, but chiefly of plants which are common elsewhere, and, as such, may have been passed by visiting botanists without comment.

In the list below, all localities given, unless qualified, are new. A species has been deemed worthy of detailed stations only when so treated by Marquand. New records for the island are marked with an asterisk.

I am greatly indebted to Messrs P. M. Hall, C. E. Hubbard, and J. E. Lousley, who have examined and named a number of critical plants.

Ranunculus parviflorus L. Near Fort Tourgis.

R. hederaceus L. Trois Vaux Valley.

Matthiola incana (L.) R. Br. Platte Saline. Crabby Bay. Recorded by Miss Vachell (*B.E.C. 1929 Rep.*, 102 (1930)) without locality.

Alyssum maritimum Lam. Longy Road.

Erophila verna (L.) E. Meyer. Val du Sud.

Brassica incana (L.) F. Schultz and var. hirta (Bab.) Druce. Still at Braye Bay, but not common.

Coronopus didymus (L.) Sm. Butes Hill. Cats Bay. Essex Castle Hill. Newtown. Clonque Valley. Crabby Bay. Apparently it is an increasing species, as it is given by Marquand as rather rare.

Crambe maritima L. Several plants at Platte Saline; Marquand saw only one. Longy Bay.

Raphanus Raphanistrum L. Fort Houmet. Braye Bay.

Reseda lutea L. Hill near Terrace. Thought by Marquand to be extinct.

Helianthemum guttatum (L.) Mill. Still plentiful near Val du Sud, although it does not now extend for a quarter of a mile as given by Marquand.

Silene conica L. Longy Bay. Near Fort Raz.

S. anglica L. The pale rosy-pink form mentioned by Marquand occurs sparingly on the cliff at Les Becquets.

*S. gallica L., var. sylvestris (Schott.) Aschers. & Graebn. Near Fort Houmet. Les Becquets.

*Lychnis alba L. × dioica Mill. Near Hanging Rock.

Polycarpon tetraphyllum L., var. *diphyllum DC. Near Hanging Rock. Corblets Bay. Corblets Point. Braye Bay. This is probably the common form in Alderney.

Malva neglecta Wallr. Essex Castle Hill. Hanging Rock Cliff. Thought by Marquand to be extinct.

Hypericum humifusum L., var. *decumbens Reichb. Near Fourquie. Corblets.

Radiola linoides Roth. Near Fort Houmet. Near Hanging Rock. Fort Quenard. Apparently an increasing species, as there have been only two stations previously recorded. Plants from each locality were uniformly small.

Geranium rotundifolium L. Quarry near La Tchue.

*G. pusillum L. Braye Bay. Previously known only for Jersey of the Channel Islands.

Erodium maritimum L'Hérit. Trois Vaux Bay. Telegraph Bay. Val du Sud. Cats Bay.

Ononis reclinata L. Seen in several parts of the coast, but it is not nearly as plentiful as would be expected from the Flora.

*Melilotus altissima Thuill. Butes Hill.

Trifolium incarnatum L. Above Hanging Rock.

T. striatum L., var. erectum Gaspar. Cats Bay.

T. glomeratum L. Near Val du Sud. Cats Bay. Corblets.

T. suffocatum L. Cats Bay.

Lotus corniculatus L. A pale-coloured form grows at Corblets in which the standard margins are folded forwards and meet in a point at the top. The keel, also, protrudes beyond the wings, thus giving a "double-pointed" appearance which is most striking.

Ornithopus pinnatus (Mill.) Druce. Meadow above Hanging Rock. Near Fort Quenard. Present existence confirmed also at Mannez Quarry and at two localities near Val du Sud. A very hairy form occurred on the cliff at Val du Sud.

Lathyrus pratensis L. Still persists in its only known locality at Longy Bay.

Bupleurum opacum Lange. Near Fort Raz. Several other stations were confirmed.

Chaerefolium Anthriscus (L.) Schinz & Thell. Near Val du Sud. Braye Bay.

*Tussilago Farfara L. Cachliere Pier.

Petasites fragrans Presl. Near Terrace. Mourias, St Annes.

Picris echioides L. Butes Hill.

Crepis capillaris (L.) Wallr., var. *griseola Thell. Val du Sud.

Tragopogon minor Mill. White Gates.

Limonium lychnidifolium O. Kuntze, var. corymbosum C. E. Salmon. Marquand noted about a dozen plants at Fort Hommet, but in 1932 Messrs A. B. and A. K. Jackson counted about sixty. In 1937 only about twenty-five could be found.

*Symphytum peregrinum Ledeb. Near La Tchue.

*Verbascum Thapsus L. Essex Castle Hill.

Linaria Cymbalaria (L.) Mill. Now abundant all over the town of St Annes.

Orobanche amethystea Thuill. Longy Bay. Platte Saline. In one case parasitic on *Glaucium*.

Marquand recorded "*Orobanche amethystea* Thuill." from two localities, and what is probably the same form was noticed at Longy Bay and Platte Saline. There is some doubt that *O. amethystea* is the correct name, but the plants agree well with Butcher and Strudwick's description and figure, and are distinct from normal *O. minor* in the following particulars:—Bracts more gradually tapering; corolla shorter and broader, less curved above, and with a larger lower lip; ovary broader, more abruptly narrowed below the style and slightly glandular; style shorter and stigmatic lobes more confluent; the whole plant is much more richly coloured with a reddish-purple shade, quite distinct from the bluish purple of *O. purpurea*.

O. purpurea Jacq. Very abundant in many places. It flowers almost before the leaves of the host, *Achillea Millefolium*, have appeared.

Herniaria glabra L. Still at Bibette Point, in very small quantity.

Polygonum amphibium L. Platte Saline.

Thesium humifusum DC. Braye Bay.

Anacamptis pyramidalis (L.) Rich. Platte Saline.

Allium triquetrum L. In many new localities; apparently increasing rapidly.

Carex paniculata L., var. *simplex Peterm. Clonque Valley.

*Koeleria britannica (Domin). Braye Bay.

Bromus rigens L. Still at Braye Bay, but not common.

B. hordeaceus L., var. Thominei Rouy. Cachaliere Pier. Fort Albert.

Asplenium Trichomanes L. Near Rose Farm.

A. Ruta-muraria L. Longy Road. Wall near Terrace, one plant.

Dryopteris Filix-mas (L.) Schott. Butes Hill.

Ceterach officinarum Lam. & DC. Wall near Terrace. This may be Marquand's single locality where he saw only three plants. There are several hundreds there now. Sparingly on wall near Rose Farm.

Isoetes Hystrix Durieu. This rare terrestrial Quillwort was found by Marquand in the year following the publication of his *Flora*. The station is given as "Cliffs immediately opposite the coast of France." That part of the island, however, which is nearest

the mainland is low-lying, and a prolonged search failed to locate the plant. The search was extended southwards, and eventually a few specimens were found on the cliff between Hanging Rock and La Tchuë at nearly 200 feet altitude. The short turf very effectually hides the thread-like leaves which are the only indication of the presence of the plant. Unlike the Guernsey localities, the soil here is neither sandy nor damp.

Chara vulgaris L. Longy Pond. Given in the *Supplement* but without locality.

THE GENUS TILIA IN BRITAIN.

H. A. Hyde, M.A., F.L.S.

Preliminary study of this (in Britain) small genus has shown that a number of points connected with it require elucidation. These are referred to briefly below: any relevant information (whether accompanied by specimens, which should be very fully labelled, or not) will be very gratefully received by the writer.

1. Large-leaved Lime (*T. platyphyllos* Scopoli) is believed to occur as a native in rocky mountain woods in the following vice-counties:—W. Gloster (34), Monmouth (35), Hereford (36), Salop (40), Brecon (42), Radnor (43), Derby (57), N.W. Yorks (65). Confirmatory specimens from v.-cc. 35, 43 and 57 would be welcome, as also would evidence of the occurrence of this species as a native tree in any vice-county not mentioned.

2. Small-leaved Lime (*T. cordata* Miller) is believed to occur as a native tree in semi-natural woodland from Devon to Durham; it is commoner in the west than in the east. Confirmatory specimens from the eastern and southern counties and from any of the following are desired:—E. Gloster (33), Warwick (38), N.E. Yorks (62).

Occasional specimens of *T. cordata* bear leaves which are more or less three-lobed, and appear therefore to approach the var. *vitifolia* Schneider. It is not known to what extent the peculiarity is shared by all leaves on a given tree. Information relating to this point, together with specimens, is desired.

3. Common Lime (×*T. vulgaris* Hayne) has not yet been recorded with certainty as a native tree in Britain. The putative parents grow together at various stations (Gt. Doward, Symonds Yat, Lancaut, Craig Cilau). Specimens of ×*T. vulgaris* from any such situations would be welcome.

A second hybrid between the two native Limes, viz., *T. pallida* Wierzbicki, is in cultivation in Britain. It is distinguished from ×*T. vulgaris* " by the smaller leaves often not much larger than those of *T. cordata*, as broad as or broader than long, yellowish or bluish-green beneath; it is readily distinguishable from *T. cordata* by its prominent tertiary venation and has flowers and fruits like those of typical *T. vulgaris* " (Henry). Specimens of this form and information bearing on the question of its frequency relative to that of the " type " are desired.

RUBUS ECHINATUS LINDLEY.

William Watson.

The publication of Weihe and Nees' *Rubi Germanici* was completed in 1827. In 1829 Lindley attempted in his *Synopsis of the British Flora* to identify with Weihe and Nees' species some British fruticose brambles which he had been studying for several years.

In every case where Lindley identifies a British bramble with one of Weihe and Nees' species he gives Weihe and Nees' description, but rarely any other particulars. A specimen of the British bramble he had in view is in a few instances preserved in Lindley's herbarium, and Borrer's herbarium contains certain specimens which came from the garden of the Horticultural Society, from bushes which Lindley said represented the species of his *Synopsis*, ed. 1. From these specimens it is possible to judge the success of Lindley's identifications with the German brambles. It does not amount to much. Only once—in the case of *Rubus fusco-ater*—does the specimen of Hb. Lindley agree with the bramble of Weihe and Nees; and not once does the specimen from the garden agree with the bramble intended by those authors.

It must be kept in mind, therefore, that very little dependence can be placed on any *unsupported* statement of Lindley that one given bramble or specimen is identical with some other named bramble.

One new species appears in the *Synopsis*, ed. 1, namely *Rubus echinatus*. For this we have the description which—the species being new—Lindley had to write himself, and it is no doubt authentic. There is not a specimen of *R. echinatus* in Hb. Lindley; but in Hb. Babington there is one that once belonged to Leighton and was identified by Lindley in 1836 as *R. echinatus* Lindl. *Syn.*, ed. 1. There is also a specimen in Hb. Borrer which was sent by Leighton and is marked "*R. rudis* (*R. ech.*, ed. 1)—Prof. Lindley." These specimens agree with each other and with Lindley's description of *R. echinatus* in ed. 1. Specimens and description are *R. hystrix* Weihe & Nees. I know of no other specimen determined by Lindley as *R. echinatus*.

There is in Hb. Borrer a specimen from the Horticultural Society's garden, labelled by Borrer as *R. echinatus*, but it is a different species. Borrer has written a note that it is the bramble that Lindley called *R. rudis* Weihe & Nees; and it is a fact that it is identical with a specimen in Hb. Lindley that Lindley has determined as *R. rudis*. This specimen of Borrer's labelled "*R. echinatus*" has sent all modern British authors astray: they have regarded the specimen as authentic and ignored Lindley's description and the specimens determined by him for Leighton.

Lindley's description of *R. echinatus* ed. 1 is ". . . Leaflets . . . roundish cordate . . . green . . . beneath. Panicle spreading . . . leafy at the base . . ." This is right for *R. hystrix*, wrong for Lindley's "*R. rudis*," as that has leaves white beneath, obovate leaflets with an en-

tire base, and a long, narrow panicle, which is leafy throughout. The specimen from the garden is the latter bramble, and is therefore not authentic *R. echinatus*.

Babington, it is true, speaks of the bush in the garden of the Horticultural Society as authentic (*British Rubi*, 209), but his only warrant for doing so appears to be that Lindley referred Borrer to the living bushes in the garden, in 1829, as representing the species in Lindley's *Synopsis*, and that in the preface to the *Synopsis* Lindley says the new species he had added were all growing in the garden of the Horticultural Society, where, he says, he had studied them for several years. This is not quite conclusive, as Lindley does not say that he had *described* his species from the bushes in the garden—in the case of *R. echinatus* he cannot have done so, as plant and description are not reconcilable—and according to Babington (*British Rubi*, 4, footnote) he actually denied that the bush of *R. diversifolius* in the garden was authentic. This is hard to understand, as the bush in the garden was *R. vestitus*. *R. diversifolius* in Hb. Lindley is *R. vestitus*, and the description of *R. diversifolius* in *Syn.*, ed. 1, is *R. vestitus* too. None of these would be authentic, however, for *R. diversifolius* of *Syn.*, ed. 2, which is *R. myriacanthus* Focke, and this may have been what Lindley meant by his denial.

Clearer instances where the bush in the garden cannot have been authentic are to be found where the species of the *Synopsis* is represented both by a specimen from the bush in the garden, and by a specimen in Lindley's herbarium. *R. leucostachys* from the garden was *R. vestitus*, *R. leucostachys* in Hb. Lindley is *R. leucostachys* Smith, the description in the *Synopsis* is *R. leucostachys* Smith. The bush in the garden was therefore not authentic. (Incidentally the *R. leucostachys* of Lindley's ed. 2 is *R. Lindleyanus* Ed. Lees, so in this case also Lindley changed the application of a name in ed. 1 to a fresh plant in ed. 2). Take another example: *R. fusco-ater* in Hb. Lindley is true *R. fusco-ater* Weihe & Nees, but the *R. fusco-ater* from the garden is *R. dasyphyllus* Rogers. That is to say, the bush in the garden again was not authentic. It is evident, therefore, that it would not be safe to assume, where corroboration is lacking, that any specimen from the garden was authentic.

Now it happens that there is an indication from a fresh quarter that the garden plant was not the true *R. echinatus* Lindl. By mistake Babington published a description of a specimen of Lindley's "*R. rudis*" in *Man.*, ed. 1 (1843) as *R. echinatus* Lindl. Babington's specimen is in Hb. Brit. Linn. It came from Leighton, who gathered it in 1837 at Haughmond Abbey, Salop. In *Syn. Br. Rubi*, 23 (1846), Babington himself acknowledges the error, "An incorrectly named and supposed authentic specimen caused me formerly to consider this as *R. echinatus* (Lindl.), which I have now ascertained to belong to *R. fusco-ater* of Weihe." At page 26, *l.c.*, the true *R. echinatus* Lindl. is described under the name of *R. fusco-ater*, g. *echinatus*. A specimen from Haugh-

mond Abbey is quoted: I have seen this and it is *R. hystrix* Weihe & Nees.

Lindley's subsequent treatment of "*R. rudis*" and *R. echinatus* in the second edition of his *Synopsis* (1835), combining them as one species, "*R. rudis*," seems to have been due to his declared determination, on general grounds, to reduce the number of his species. He has brought the 21 fruticose species of ed. 1 down to 12, but has included two new ones from Weihe and Nees' monograph. There can be no doubt that *R. echinatus* is distinct from his "*R. rudis*." He correctly distinguished them for Leighton, and they are distinguished still by modern authors, as *R. hystrix* Weihe & Nees (Hystrices) and *R. discerptus* P. J. Muell. (Radulae) respectively.

Boulay and Sudre have noticed that *R. echinatus* Lindl. is not the same as Lindley's "*R. rudis*." When Focke in *Syn. Rub. Germ.* (1877) brought it to notice that the English "*R. rudis*" was not the *R. rudis* of Weihe & Nees, and that a different name was therefore required for Lindley's bramble, he does not seem to have referred to Lindley's description of *R. echinatus* (1829) although he cites it. He seems merely to have taken Babington's statement (*Br. Rubi*, 189) that his "*R. rudis*" was *R. echinatus* of his ed. 1. He also cannot have observed the contradictory statement on page 201, *l.c.*, that *R. echinatus* Lindl., ed. 1, was *R. Koehleri*, a *verus* Bab. The contradiction is explained on page 209, *l.c.*, where Babington states that if *R. echinatus* Lindl. is determined by the specimens named by Lindley it is a form of *R. Koehleri*, a *verus*, but if by the authentic plant in the Horticultural Society's garden it is the *R. rudis* of Weihe and of Lindley. (Babington gives *R. fusco-ater*, g *echinatus* Bab. as a synonym of *R. Koehleri*, a *verus*). As has been shown, it is quite impossible that the bush in the garden can have been authentic.

It is extraordinary that Linton and Rogers in *Journ. Bot.*, 1905, 203, should have claimed Babington's description of *R. echinatus* in *Man.*, ed. 1 (1843), as a full and unmistakable description of Lindley's *echinatus*. That description on examination will be found to be mainly copied from Lindley, but with additions clearly supplied from "*R. rudis*," with the result that it describes neither "*R. rudis*" nor *R. echinatus*. Also, as has been seen, Babington afterwards found that the specimen from which he wrote the description was not the true *R. echinatus*. Rogers and Linton acknowledge that Lindley's description seems to them "not a good description." The explanation, of course, was that the bramble which they and Focke and others knew as *R. echinatus* was different from Lindley's bramble.

To summarise briefly: *Rubus echinatus* Lindley *Syn.*, ed. 1 (1829), is the same as *Rubus hystrix* Weihe & Nees (1825), and as the latter name has the priority *Rubus echinatus* cannot be used. The correct name for the plant to which botanists have transferred the name *R. echinatus* is *Rubus discerptus* P. J. Muell. (1859).

RUBUS ROTUNDIFOLIUS (BAB.) BLOX. APUD KIRBY.

William Watson.

In *Ann. Nat. Hist.*, *2*, 40 (1848), under the name *Rubus glandulosus*, e. *rotundifolius*, Babington described specimens of a bramble sent to him by Bloxam, who had obtained them from a small plantation of firs on the Appleby road near Twycross, Leicestershire. Bloxam raised the bramble to specific rank in an account of the brambles of Leicestershire which he contributed to Kirby's *Fl. Leic.*, ed. 2, 39 (1850).

The original specimens are in Herb. Babington at the British Museum of Natural History, South Kensington, and from them a lectotype has been chosen by Messrs Barton & Wilmott. I have seen these specimens, and I think there can be no doubt that they are the same as *R. Drejeri* G. Jensen in *Fl. Dan.*, t. 3023 (1883).

All English authors after Babington, and all Continental authors, have used the name *R. Drejeri*, but this must now give place to the earlier name *R. rotundifolius*.

The *Rubus hirtus*, var. *rotundifolius*, of Rogers's *Handbook*, 88 (1900) is different from Bloxam's bramble.

Rogers suggests in the *Handbook*, 66, that the type specimens of *R. Newbouldii* Bab., collected at Loxley by Newbould, are *R. Drejeri*, and later he confirmed that determination.

If this opinion were correct *R. Newbouldii* would have to be regarded as a synonym of *R. rotundifolius*. I have examined the Babington type specimens and I find that whilst the stem-piece is *R. rotundifolius*, the panicle belongs to *R. radula*, subsp. *echinatoides* Rog. That the specimens were mixed from the outset is proved by Babington's observation in describing them originally in *Ann. Nat. Hist.*, *19*, 87 (1847) that the panicle was "exactly like that of typical *R. rudis*." By "*R. rudis*" at that time Babington meant the bramble which Focke later called "*R. echinatus*," and from resemblances to that bramble *echinatoides* took its name. The panicle of *R. rotundifolius* bears no resemblance to *R. radula*, sub-sp. *echinatoides*. As *R. Newbouldii* Bab. in *Journ. Bot.*, 1887, 20, is equally founded on these mixed type specimens, it cannot stand and cannot be quoted as a synonym of *R. rotundifolius*.

MATERIAL FOR A STUDY OF TAXONOMIC PROBLEMS IN TARAXACUM.

W. B. Turrill.

The dandelions are an important element in the existing flora of the British Isles as its constitution has been modified, qualitatively and quantitatively, by man. That they owe their great abundance in individuals to man is obvious from their common occurrence as weeds and ruderals or in habitats much changed by man. Needless to say, the dandelion figures prominently in folklore and in herbalist medicine and all parts of the plant have been or are put to human use. Relative to the size of the plant as a whole the flower-heads at full anthesis are large and conspicuous. As has been said: " were it not so familiar, [it] would probably be thought attractive " (1).

As is well known, and more fully discussed below, many, and probably most, of the dandelions of northern and western Europe are apomictic, i.e., they set viable seed without fertilisation. From the taxonomic standpoint the known or supposed apomicts in *Taraxacum* have not been so intensively studied, in the British flora, as have those in *Hieracium*. At the present time knowledge concerning them is both fragmentary, and, in many ways, uncertain—and this apart from theoretical considerations of taxonomic status. Bentham and Hooker (2) retain one species with " four principal forms " in the British Isles. No essential changes, apart from nomenclatural ones, are made in the last edition (ed. 7) by Rendle (3). Wilmott (4) has an account which is difficult to follow, but apparently recognizes one major species with about half-a-dozen microspecies. Druce (5) lists 95 names, presumably as specific. Since 1928 a number of other so-called species have been described from the British Isles (39-42, 51). Very briefly, the position is that over a hundred biotypes of *Taraxacum* have been recorded from the British Isles under what are nomenclaturally specific epithets. There is no general published account of these, no uniform contrasting set of descriptions, and no key. How far the names, descriptions, and identifications are valid with reference to British material, apart from the taxonomic status of apomicts, is often uncertain. How far the list given by Druce, even if it be accepted at its face value, really represents a fairly complete sampling of British Taraxaca is unknown. In addition to these practical points there is the very difficult problem of deciding how the biotypes should be taxonomically treated in order to give a classification of greatest general use and most in accord with accepted taxonomic principles.

Before any of the above problems can be solved it is necessary to give full consideration to all known facts which have a direct or indirect bearing on the genus *Taraxacum* itself or upon the wider problems of apomixis and classification of units at or below the Linnean level. The objects of this paper are to bring together the more important litera-

ture, to summarize, all too shortly, what are considered relevant facts, to outline research work now in progress, and to ask for help in continuing and extending this work. Certain practical conclusions are enumerated at the end of the paper.

THE GENUS TARAXACUM.

It is not proposed here to give a full account of *Taraxacum* as a genus, but in order to obtain a fair perspective from which to view more controversial and unsettled problems the following historical and taxonomic data are presented in a summary form.

The name *Taraxacum* was used by Linnaeus (6) in 1735 as a generic name under the hierarchical groups *Syngenesia Monogamia β Semiflosculosi*. In 1753 (7) he used the name *Leontodon* to include *L. Taraxacum* and five other species. *Leontodon* (sensu Linn. *Sp. Pl.*) is now segregated and, by the International Rules, *Taraxacum* Wiggers, 1780 (8) is to be maintained as the generic name of the dandelions. This ruling is convenient in doing away with any argument as to dating the name from Haller (9), who did not use the Linnean binary nomenclature, although later in date than Linn. *Sp. Pl.*

Good generic descriptions are given by Bentham and Hooker (10) and by Handel-Mazzetti (11). The genus is well characterised by the following morphological features: perennial herbs with latex; with perpendicular simple or branched root; old leaf-bases more or less persistent; leaves in a rosette, entire or variously lobed or incised; scapes solitary or several, arising from the crown or the divisions of the crown, simple, usually without scales or leaves; capitulum erect, many-flowered; involucre double, an inner series of phyllaries of equal length in two whorls, an outer series spirally arranged and shorter than the inner; receptacle subplane, naked, areolated; flowers all with androecium and gynoecium superficially fully developed, liguliform; anther lobes acuminate at the base; style bifid; bristles of the pappus denticulate (not plumose); cypselas cylindric or thickly fusiform, longitudinally sulcate, the ribs most often, at least in the upper part, muricate with extended tubercles, usually with a well marked beak, rarely erostrate, more or less contracted at the base.

Morphologically the most closely related genera in the British flora are *Hypochoeris* and *Leontodon*, both of which have the pappus bristles plumose and the cypselas not muricate. *Hypochoeris* also has receptacular membranous scales. *Hieracium* is distinguished generically from *Taraxacum* by the truncated apex to the cypselas. *Crepis*, a genus rather polymorphic in habit and in cypsela characters, is distinguished from *Taraxacum* by the smooth or scarcely rugose ribs of the cypselas.

INTRA-GENERIC TAXONOMY.

The monograph of *Taraxacum* by Handel-Mazzetti (11) and the Nachträge (12) form an indispensable basis for the study of the genus as a whole. Sixty-three species are recognised and these are classified into

ten sections (12). The basis of recognition of species is a reasonable intermediate one between that of extreme lumping and of extreme splitting. The artificial key to the species works well (with a few exceptions) and well-prepared herbarium material (with flowers and fruits) can usually be determined with its aid without undue difficulty. Handel-Mazzetti does not name, or accept as species, the numerous biotypes of *T. officinale* (*T. vulgare*) and of several other of his species. There is no doubt that for many purposes Handel-Mazzetti's classification is, with minor modifications, quite sufficient. While the Scandinavian biotypes of *Taraxacum* have been submitted to intensive studies and can possibly be classified with some degree of finality, it will take many years of research, of a whole-time nature, before the biotypes occurring in the British Isles are discovered, examined, tested, described, and classified with reasonable completeness. Handel-Mazzetti's standard of "species" and scheme of classification are therefore the ones which can best be tentatively adopted by those British botanists who are not making a special study of apomictic genera.

The following "species" are recorded from the British Isles under Handel-Mazzetti's scheme:—

Sect. VII. Borealia.
Subsect. 2. Gymnophylla.
Ser. a. Vulgaria.
42. *T. palustre* (Lyons) Lam. et DC.
43. *T. balticum* Dahlst.
44. *T. officinale* Web.

Sect. IX. Erythrocarpa.
58. *T. laevigatum* (Willd.) DC.
59. *T. obliquum* (Fries) Dahlst.

The following key to the species indicates useful characters for preliminary determination:—

A. Cypselas pale or obscurely brown, grey, or blackish.
B. Outer phyllaries not much broader than the inner and scarcely half shorter, for the most part at least narrowly lanceolate or linear and more than three times longer than broad ..... *T. officinale*
B.* Outer phyllaries, at least for the most part, rather broadly or rather narrowly ovate and rarely up to three times longer than broad.
C. Achenes ± gradually attenuated into a conical cusp with rather small tubercles in the upper part or even nearly smooth. Beak rather slender and usually slightly longer than the cypsela.
D. Leaves succulent, narrow, regularly remotely pinnate nearly or quite up to the middle nerve, lobes linear, entire, spreading. External phyllaries in the marginal part very broadly membranaceous, with a narrow decolorated margin ..... *T. balticum*
D.* Leaves entire or denticulate or more rarely repand sinuate. External phyllaries with a broad decolorated membranaceous margin ..... *T. palustre*

C.* Achenes suddenly or abruptly contracted into a long or short cylindrical cusp, covered above with medium or long tubercles. Beak usually slender and much longer than the cypsela ..... *T. obliquum*

A.* Cypselas generally intensely red-purple ..... *T. laevigatum*

APOMIXIS.

The cycle of normal sexual reproduction in the Spermatophyta involves two complementary processes: fertilization, i.e., the fusion of a male and female gamete, and reduction, i.e., the halving of the chromosome number of the somatic (ordinary vegetative body) nuclei. The interval (as judged by the number of cell divisions) between fertilization and reduction is long and involves the whole of the life-history apart from the pollen grains and embryo sacs. The interval between reduction and fertilization is correspondingly short. The chromosomes, which in the main constitute the nucleus, are in definite sets, every functional nucleus having at least one complete set. Many complications of chromosome number, structure, and behaviour are now known to cytologists and the terminology in use is not altogether satisfactory. It is essential, in order fully to understand the taxonomic problems of *Taraxacum*, that the following should be made clear: in any individual plant the number of chromosomes in the gamete is the *haploid* number, designated n; the number of chromosomes in the zygote resulting from normal fertilisation is the *diploid* or $2n$ number, and this, of course, is the usual number in all the vegetative nuclei up to reduction; a chromosome set is conveniently designated x; polyploidy is a multiplication of chromosome numbers or sets; confusion can best be avoided by using symbols—n, 2n, 3n, 4n, etc., or x, 2x, 3x, 4x, etc., according to whether the polyploid evaluation is based on the actual haploid number of an individual or on the basic chromosome set. The terms diploid (2n, 2x), triploid (3n, 3x), tetraploid (4n, 4x), etc., have been used in two senses.

In many plants ordinary sexual reproduction (*amphimixis* of Winkler) has been replaced or, more often, supplemented by other methods of multiplication. Winkler (13) gave the term *apomixis* to these and recognised the following three groups of kinds: vegetative propagation (including the adventitious formation of embryos from nucellar cells), apogamy (the origin of an embryo sporophyte from the vegetative cells of the gametophyte, i.e., from a cell or cells other than the female gamete or egg), and parthenogenesis (the origin of a sporophyte from the female gamete without fertilization). It is important to note that either parthenogenesis or apogamy may be carried through with one (n) set of chromosomes or with more than one. In flowering plants diploid apogamy or diploid parthenogenesis is commoner than haploid. That is to say, the embryo develops without fertilization from a cell which structurally belongs to the gametophyte but has an unreduced number of chromosomes. It should further be realized that in seed-bearing plants apogamy and parthenogenesis can, and often do, result in the production of seeds with full viability and morphologically indistinguishable from amphimictically produced seeds. It is impossible to determine

apomixis without experiment or cytological examination of the essential parts of the life-history.

Winkler's simple scheme has been enlarged and modified, with certain changes in terminology and definition, by more recent authors. The reader is referred to Darlington (14, ch. XI) for a fuller modern account.

APOMIXIS AND CYTOLOGY IN TARAXACUM.

Schwere (15) studied the development of the embryo and fruit in "*Taraxacum officinale.*" He did not recognise apomixis as such, although it is probable from his account that he actually observed it. He says he long sought without result to find a stage in his preparations showing union of male and female gametes, though, he claims, he saw in some sections the end of a pollen tube in fertilised embryo sacs. His figure of this is not convincing and, it may be suggested, the supposed end of a pollen tube really represents a degenerating second synergid. Further, his record of fertilization (Befruchtung) of a synergid is really an example of apogamous development of one of the two synergids, proceeding, as illustrated in his figure, with parthenogenetic development of the egg, that is apogamy and parthenogenesis are occurring in one and the same embryo-sac.

The first clear demonstration of apomixis in *Taraxacum* which has been traced is that by Raunkiaer (16) for Danish dandelions. Using the same "castration" methods as employed at about the same period by Raunkiaer and Ostenfeld (17) for *Hieracium* and other Cichoriae, Raunkiaer showed that viable seeds (one seed inside each inferior indehiscent fruit or cypsela) are set even after the anthers and stigmata have been removed before anthesis by cutting through the capitulum in bud at a sufficiently low level. Raunkiaer experimented with a sufficient number of biotypes to reach the conclusion that probably all the Danish Taraxaca are apomictic.

Murbeck (18) studied the cytology of castrated heads of two stocks, which he named *T. vulgare* (Lam.) Raunk. and *T. speciosum* Raunk. He recorded the large size of the egg, embyro formation without fertilization from the egg in more than 90 per cent. of the florets, and that, in uncastrated heads, embryo formation, at least in the late autumn, can commence in florets before they open. *T. vulgare* (Lam.) Raunk. produces abundant, though for the greater part "bad" pollen grains; *T. speciosum* Raunk. has empty anthers.

Juel (19, 20) for "*Taraxacum officinale*" found that in young ovules the embryo sac mother cell divides only once, *i.e.*, without full tetrad formation. The basal daughter cell develops into an embryo sac without any reduction in the chromosome number of its nucleus. The chromosome number was determined as most often 24-26. The pollen mother cells (in the material used) gave rather regular tetrad divisions with 12-13 as the reduced chromosome number. Juel finally accepted $n=13$, $2n=26$ as the most probable numbers.

Research at this stage clearly showed that many north-western European Taraxaca were apomictic and the question arose as to whether sexual reproduction had entirely disappeared from the genus. Investigations by Rosenberg (21), Ikeno (22), and Osawa (23) answered the question in the negative. Rosenberg found definite tetrad formation in the embryo sac of *T. confertum* with many stages in the reduction of the chromosomes to n=8. A pollen cell with 8 chromosomes was also seen, while 16 chromosomes were seen in somatic divisions. Actual fertilization was not observed. Ikeno (following unpublished results of Tanaka) castrated heads of *T. albidum* Dahlst. and *T. platycarpum* Dahlst., two morphologically distinct biotypes occurring in Tokio. The former produced abundant and the latter no viable fruits after the treatment. Additional controlled pollination experiments were also made. It was concluded that *T. albidum* was apomictic and *T. platycarpum* amphimictic. Osawa confirmed Ikeno's experimental results with *T. albidum* and *T. platycarpum*. Cytological examination showed n=8 and 2n=16 for *T. platycarpum*. There is normal tetrad production in both pollen grain and embryo sac formation. The chalazal megaspore of a row of four becomes the embryo sac. In *T. albidum* irregularities at the formation of the pollen lead to disintegration or absence of viability of the grains. The embryo sac mother cell undergoes no reduction division and produces only two megaspores, of which the one towards the chalaza becomes the embryo sac. The chromosome number was determined as between 36 and 40. The egg developed parthenogenetically.

Sears (24, 33) and Stork (25) report a series of experiments, observations, and cytological investigations which, on the whole, confirm the work of earlier workers and with them indicate that the majority of Taraxaca are apomictic.

A series of papers giving an account of recent cytological researches has been published by Åke Gustafsson (26-32). These researches very considerably extend our knowledge of the cytological details and apomictic behaviour in *Taraxacum* and it is desirable to summarize very briefly some of the more important facts and conclusions. Castration experiments with biotypes belonging to the groups Vulgaria, Erythrosperma, Obliqua, Spectabilia and Ceratophora gave entirely positive results (26) and showed that sexual biotypes must occur very infrequently, if at all, in the populations studied. The basic chromosome number is clearly shown to be x=8. The group Vulgaria is triploid (2n=24); Erythrosperma is triploid and occasionally tetraploid; Palustria is tetraploid; Obliqua is triploid; Spectabilia is tetraploid and occasionally pentaploid; Ceratophora is triploid and tetraploid; Arctica is probably hexaploid. *T. minimum* (? *megalorrhizon* Hand.-Mazz.), *T. serotinum*, and *T. bessarabicum* were found to be diploid. The polyploidy is found to be allopolyploidy, *i.e.*, presumably having originated in connection with primary hybridization.

In a biotype of "*T. officinale*" pollen sacs were observed with increased chromosome numbers (from 24 to 76) in the pollen mother cells

(27). The increase comes about through repeated divisions of chromosomes without dissolution of the nuclear membrane. Only gemini were observed and loss of genes is postulated as the cause of suppression of pairing and of degeneration of the male apparatus. Satellites are recorded in pollen mother cells (28). In apomictic biotypes (apomicts) formation of the embryo sac (after one division of the embryo sac mother cell) is much more regular than the formation of pollen grains and the male organs appear to have lost genes controlling their normal development and the superfluous reduction division has often ceased or taken on a mitotic character (29). Apomicts morphologically distinguishable as biotypes occur with different frequencies in different groups. They are most numerous in Vulgaria. The details of their geographical distribution (mainly studied for Scandinavia) reveal many matters of interest and suggest that the Taraxaca biotypes furnish excellent material for studies connected with past and present climates, phytogeographical boundaries, and ecological units (30), as well as for the cytological phenomena connected with parthenogenesis (31). Finally, the cytology of a polymorphic "microspecies," of the Vulgaria group, named *T. obtusilobum* Dahlst., is shown to be diploid (2n=16) and to form a self-sterile population which survives in nature only by means of cross-pollination. Crosses, giving fertile hybrids, were made between *T. obtusilobum* and other biotypes and a probably spontaneous hybrid is also described (32).

PHENOTYPIC PLASTICITY OF GENOTYPES IN TARAXACUM.

The taxonomist nearly always classifies phenotypes. Plants as living organisms are, however, dynamic, changing their characters, within certain ranges, with age and with the environmental conditions to which they are or have been, or more rarely to which their parents have been, subjected. The taxonomist, therefore, attempts, often with great success, to describe, use, or emphasize those characters which are relatively constant, *i.e.*, those least affected by natural changes in the environment and which are regularly expressed by, usually mature, organisms of the same genotype. Extensive and intensive experience undoubtedly enables the trained taxonomist to evaluate characters from this standpoint with a precision which has often seemed uncanny to workers in other branches of botany. In certain groups of plants, however, this method is recognized to be unscientific, particularly in such cryptogamic groups as the bacteria and fungi. Two methods can replace it. Either the age and environmental life conditions of the material described and classified can be stated or, the ideal, the full life-history under all possible varying conditions can be described. Neither is an easy task and the latter can only be approximately completed.

Species and genera vary greatly in their degree of plasticity under varying natural conditions. This has been clearly shown in the Transplant Experiments of the British Ecological Society at Potterne, Wiltshire. *Taraxacum* must be placed among the more plastic genera and this character is undoubtedly one of the numerous difficulties the taxonomist

has in attempting to identify and classify either the "species" of the standard of Handel-Mazzetti or the biotypes of the standard of Dahlstedt. This matter has been discussed by earlier writers. Sears (33) summarizes the observations and experiments of earlier authors and adds valuable data to them. Griffith (34) also deals with periodicity in leaf-form. The following account is mainly based on unpublished observations and experiments which are still in progress at Kew. I have to thank Miss W. Curtis, B.Sc., for allowing me to refer to research she is doing on Kew material.

Taraxacum has, like all other plants, certain advantages and certain disadvantages as experimental material. It is easy to transplant at any time of the year, it can be quickly multiplied by crown cloning, seeds germinate quickly, and a fair percentage can be germinated within a week of ripening. All the species and biotypes so far tested, with only a few exceptions, grow well at Kew, though some survive longer than others. New roots are readily and quickly produced. Since all the British biotypes so far tested produce seed apomictically their seed offspring are (in the absence of somatic mutations) the genetical equivalent of a clone. On the other hand the absence, in all so far studied British Taraxaca, of sexual reproduction prevents any genetical research by selfing and crossing. The rosette hemicryptophytic habit, with the terminal "perennial" bud or buds at ground level, increases the technical difficulties of manipulating the bud and young leaves. At Kew the stock plants are grown in the Experimental Ground in rows under conditions of soil and microclimate as uniform as it is possible to make them under garden (as distinct from laboratory) conditions. Experiments under various controlled conditions are being carried out but these are contrasted with and are supplementary to the investigations on uniformly treated biotypes. A large collection of herbarium specimens has been preserved as a permanent record and is being added to every year.

One fact has emerged with great clearness. There is no doubt whatever of the morphological distinctness of numerous biotypes. These have a genetic basis as is shown by the uniformity of plants in rows from single heads of seeds and the obvious differences between rows. Further, but of supreme importance, these differences change with age—absolute and seasonal. In studying plasticity of any one genotype three sets of factors influencing morphological expression have to be kept in mind: 1, different environmental conditions (moisture supply, temperature, light, soil, etc.); 2, differences of season; 3, differences of age of the material. For the last it is also necessary to distinguish age from the seedling and age from rejuvenated crowns.

All parts of the plant, and especially the leaves, show plasticity. The long roots commence as simple tap-roots but soon branch laterally and, with increasing age of the plant, branch multicipitally. The degree of multicipital branching varies also with the biotype and, to a certain extent at least, with the soil. Some old plants (5 to 6 years old) can be

dug up as physiological units, others of the same age will separate into several to numerous parts when removed carefully from the soil. In all transplant experiments the "individual" is considered as that seedling or ramet growing physiologically independent on its own root system.

The stem, terminating in the bud, consists of the growing point and presumably the top part of the "crown." There is no clear demarcation between root and stem and investigations on the development of the "crown" from the seedling have not yet been completed.

The leaves form the greater part of the vegetative body visible in growing plants *in situ*. The differences in size, outline, shape, lobes, teeth, colour, and indumentum of these organs from genotype to genotype of uniform age and cultivation is very great indeed. The difficulty the taxonomist has to face is that these differences are themselves dynamic and plastic. In many stocks senescence, at least for a time, increases degree of lobing or dissection in a seedling plant, ramet, or even attached crown and, often, independent of actual leaf size. In other stocks absolute age, from seedling, decreases the amount of leaf-lobing. Leaves themselves influence the shape of younger leaves and quite different shapes can be obtained in some stocks at any growing season by removing older leaves. Preliminary experiments suggest the controlling influence of hormones. Griffiths (34) has suggested that periodic changes in leaf-form may be due to changes in the pressure of water-supply. An experiment at Kew with one stock only gave negative results, but is not considered conclusive. With seedling plants light has been shown (with two stocks) to cause marked changes in leaf lobing. Plants grown in full open daylight have much more dissected leaves than plants (of the same stock, same age, watered equally, and in the same kind of soil) grown in the shade. Experiments to test the influence of different chemical and physical conditions of the soil on leaf-shape are not yet sufficiently advanced for the results to be given.

Stout or slender peduncles are characteristic of certain biotypes grown under uniform conditions, but length is highly plastic. Occasional abnormalities occur both in the wild and in cultivation. The peduncle may bear one or more leaves or structures intermediate between foliage leaves and phyllaries. Fasciation, even to an extreme degree, is to be found in a few plants (one out of 500 to 1000) in most years. The shape of the capitulum as a whole and its size (maximum, minimum, mean, and standard deviation, as based on diameter measured for a sufficiently large and fair sample) give important characters.

The phyllaries are frequently used as giving taxonomic criteria of high value. The plasticity of these organs requires further study.

Flower characters are important but certain of them require more statistical treatment than they have so far had. Experience at Kew suggests that flower colour is often taxonomically reliable but must be judged from living material at full anthesis. "White," pale yellow, deep yellow, and certain markings come true from seed and distin-

guish certain biotypes. The number, length, and shape of the florets also show differences as between the genotypes. The presence or absence of pollen and especially the occurrence and percentage of "good" pollen has a certain value, as shown by the cytological researches summarized above. On the other hand, the degree of pollen production certainly fluctuates in some genotypes.

The cypselas are given considerable importance by all taxonomists who have worked on *Taraxacum*. Size, shape, colour, cusp, beak, spine and tubercle outgrowths, ribs, pappus length, and colour have all to be considered. As studied at Kew cypsela characters, for any one stock, show less fluctuation than do vegetative characters. Certain groups, especially some non-British ones, are clearly differentiated by cypsela characters. At the same time two difficulties have to be recognized. Cypsela characters are not constantly associated with other characters and they may be of little use in separating biotypes belonging to the same group. Thus Handel-Mazzetti (11, p. 116) places *T. obliquum* (Fries) Dahlst. in the group Erythrocarpa because of its great similarity in most characters to *T. laevigatum*, but it has "achaenia pallide griseo-brunnea!" A similar difficulty has been met with at Kew in studying certain biotypes from Thrace. Lindberg (35) states that about 200 "Arten" of *Taraxacum* are now known from Finnland and he figures two or three fruits of 331 stocks. Even allowing for the fact that the figures are in black and white outline only and do not show features of colour or surface it is evident that the differences between, combined with fluctuations within, the stocks make determination from cypselas alone within the (by far the largest) group Vulgaria impossible.

Lastly, we must consider briefly general habit and size. Again, the same general features hold. Plants of the same stock, of the same age, with the same treatment, show remarkable uniformity and often marked differences from genotype to genotype. Such genotypic differences are particularly conspicuous in seedling plants in their first and second years. The size of the plants, the orientation of the leaves (flat, spreading, suberect, erect), and the persistence of the leaves is constant for the genotype though varying with age of the plants and with the season of the year.

The general result of preliminary studies is that numerous biotypes, microspecies, or whatever they may be called, are real genotypic entities morphologically different one from another. Unless, however, the highly plastic nature of the characters, particularly of the foliage, be taken fully into account taxonomic descriptions, classification, and nomenclature lead to hopeless confusion. There is a further technical difficulty of describing adequately so highly and peculiarly lobed or otherwise divided a leaf as is found in many of the biotypes. Undoubtedly the biotypes of *Taraxacum* are extremely numerous and probably run well into three figures for the British Isles. For some purposes it is not necessary to distinguish them, for others it is. The fact remains that the methods of description—often of one or a few specimens, some-

times from dried material only—make it impossible to determine, with certainty and from the descriptions only, many of the biotypes given, for example, in such a list as Druce's, or from the descriptions published in the B.E.C. Reports by Dahlstedt (36 to 42).

THE BIOTYPES.

We have seen that in *Taraxacum* there are many morphologically different groups that come true from seed (unless mutations occur). It is a high probability that the large majority of British Taraxaca are apomictic. No British *Taraxacum* has yet been found to be amphimictic at Kew, and no published record has been found of a proved British amphimict in the genus. On the other hand, certain foreign Taraxaca have been experimentally shown to be sexually reproduced (amphimictic). While, therefore, it may sometimes be convenient to refer to those British Taraxaca which have been experimentally proved to be multiplied apomictically as apomicts, it has been considered advisable to use the more non-committal term "biotypes" for the morphologically different groups. In any theoretical discussion of the status of these biotypes it is, of course, of the greatest importance to remember that they are (at least, for the most part) apomicts.

Over 100 of these biotypes have been recorded or listed as occurring in the British Isles. The value to be attached to the names given (as in Druce's List) is at present doubtful and it is not the purpose of this paper to attempt to deal with the details of biotype nomenclature. It has, however, been thought useful to enumerate the main characters used by Dahlstedt, who has been mainly responsible for the names (as applied to British plants) in the B.E.C. Reports and in Druce's List, in describing (as species) the biotypes of *Taraxacum*. There is also given a key to the sections, modified from one of Dahlstedt's publications.

The following characters are those particularly used by Dahlstedt in distinguishing British biotypes from one another:—

Leaves: shape; flat or involute; entire, dentate, or lobed; shape of terminal lobe, laciniations, and teeth; green or grey-green; spotted or not; midrib and petiole coloured or not; hairy or glabrous.

Pericline (calathium) and involucre: large, medium, or small; shape and size of bud.

Phyllaries: shape and colour; with or without horn or callose development; with or without white margin; outer adpressed, spreading, or reflexed.

Corollas: colour (especially light or deep yellow); marginal ligulate florets with or without a coloured line.

Anthers: with or without pollen.

Styles: dull-coloured or clear yellow.

Cypselas: broadest at, above, or below middle; colour; degree of spine or tubercle development.

Pappus: length, colour.

KEY TO THE SECTIONS OF BRITISH TARAXACA, ADOPTED FROM DAHLSTEDT, 1921.

A. Achenes red ..... Erythrosperma
AA. Achenes dark green—fuliginose or grey-, greenish-, or dull straw-coloured to more or less chestnut-brown.
  B. Inner phyllaries on the outside below the apex long or at least conspicuously horned, outer long horned or shortly horned-callose ..... Obliqua
  BB. All phyllaries neither horned nor callose or the inner rarely (and a few of the outer very rarely) callose.
    C. Outer phyllaries broad, more or less ovate, adpressed, more or less marginate. Cypselas large; cusp long, cylindrical; beak short. Leaves narrow, entire or shortly dentate or with narrowly spreading, linear, distant lobes ... Palustria
    CC. Outer phyllaries ranging widely in width and direction (adpressed, spreading, recurved, or retroflexed). Leaves broad, variously lobed or incised.
      D. Cypselas large with conical cusp, commonly short, 4-6 mm. long; beak 1.75-2.75 (rarely 3) times longer than the cypsela ..... Spectabilia
      DD. Cypselas small or mediocre, with a usually short cusp, 3.5-4 mm. long; beak 2.5-3 mm. longer than the cypsela ..... Vulgaria

ECOLOGICAL AND PHYTOGEOGRAPHICAL EVALUATION.

It is important to remember that in the British flora Taraxaca occur in two main kinds of habitat: 1, as weeds of disturbed ground and as ruderals in the broadest sense of the term, and 2, in natural or semi-natural habitats, often in closed communities. In the first are found many of the biotypes of the Vulgaria section, in the other most of the recorded biotypes of the other sections known from the British Isles, and also some of the Vulgaria section. The distinction between the two kinds of habitat is, of course, not always sharp, but can generally be recognized.

Field-work in connection with the studies at Kew has not yet been sufficiently extensive or intensive for more than tentative conclusions to be drawn from it. There is no doubt that *Taraxacum* populations are, on the whole, different in different parts of the country. Thus collections from Aberdeenshire gave apomicts (grown from seed at Kew) very different from any so far found in the south of England. There is also a decided ecological difference between some, at least, of the sections. On the other hand, several to many biotypes of the Vulgaria section often grow together in the same field or on the same small area of waste ground. Many of the Vulgaria biotypes are neither phytogeographically nor ecologically differentiated from one another. In this respect they resemble what are usually termed varieties or are left unmentioned and unnamed as character combinations within a polymorphic sexual species. What is likely to be a matter of considerable interest, both in the actual accumulation of data and in results, is to determine exactly the geographical and ecological distribution of the apomicts separately and then to define their overlapping.

ORIGIN OF THE BIOTYPES.

The available evidence, especially the cytological, suggests that sexuality was formerly of general occurrence in the genus, that hybridization combined with polyploidy gave rise to a number of phenotypes, and that subsequent mutation has been, and perhaps still is, the origin of many of the numerous biotypes now known especially from N.W. Europe. The majority of described biotypes belong to the Vulgaria section, and nearly all investigated members of this section are triploid (2n=3x=24). It is unlikely that all these biotypes arose separately as the result of hybridization or of abnormal chromosome behaviour. It is probable, though not fully proved, that somatic (and especially perhaps zygotic) mutations occur now and again and give rise to new biotypes, which, retaining apomixis, are already stable, in the sense of coming true from seed. Such mutations have been recorded for other apomictic genera, including *Hieracium* (see 14, pp. 474-5) and *Rosa* (43).

It is appropriate here to recall that Weiss (44) recorded a " quilled " dandelion from a field near Manchester. The name *Taraxacum officinale*, var. *cucullatum*, was given to this biotype, which was proved by castration to be apomictic and whose characters came true in seedlings. Weiss points out that " this peculiar mutation has been recorded several times from the Continent." He also suggests that " the occurrence of a similar mutation in different countries (Tyrol, Switzerland, Britain) and arising from at least two distinct species of a genus is a matter of some interest, and has some bearing on the origin of " corresponding " species of plants and animals in different parts of the world."

No mutations in apomictic Taraxaca have yet been definitely obtained in the Kew experiments. Up to the present, over a period of 8 years, only some 4000 plants have been grown and studied in this series from over 100 stocks. This number is almost negligible in relation to the enormous seed output of which a single plant is capable. Roberts (45) gives " an average possibility of 23,436 seeds per plant growing under what may be termed nearly maximum conditions, when in full bloom," for one season only.

One other matter should be mentioned here. Experiment has shown beyond doubt that many *Taraxacum* biotypes are facultatively apomictic. Cytological evidence supports the further conclusion that many of them (especially in the section Vulgaria) are obligatorily apomictic. There is, however, the possibility that some biotypes are occasionally amphimictic, at least partially. That is, fertilization may possibly occur in a few florets here and there. It is hoped to carry out some experiments at Kew which may throw some light on this problem. In nature, insects frequently visit the open heads in considerable numbers. Lists of insect visitors are given by Schwere (15) and, with numerous bibliographical references, by Knuth (46). Casual or facultative apomixis is probably of much commoner occurrence than is known in many genera and the reverse; the casual occurrence of amphimixis in mainly apomictic biotypes is not unlikely if an egg with haploid chromo-

some number were occasionally formed and its floret pollinated with viable pollen, perhaps from another stock. Again, the enormous number of florets produced, whether estimated per plant or per acre of dandelion infested ground, gives a fair statistical chance of the unusual actually happening at fairly frequent intervals. Biotypes produced by mutation or by hybridization have, of course, to pass the sieve of natural selection before they become established.

A careful study of plants derived from seeds of heads flowering at unusual times might lead to the observation of mutation actually occurring in *Taraxacum*. Extreme conditions (as temperature) is known to increase mutation rate in some organisms. Taraxaca do not, in the writer's experience, generally flourish well in pots in heated greenhouses, and potted plants are easiest to handle for experimental purposes. However, flowering occurs sometimes out of the ordinary in the open ground. Thus, many seedlings do not flower the first year, but some do. This is partly a biotype character, partly an individual fluctuation. Some plants flower twice, in the spring and again in the autumn. Early and late seeds need testing separately in the search for mutation, as do seeds from very young and from very old plants.

POPULATION STUDIES.

The method of collecting dandelions adopted by some botanists leaves much to be desired. The selection of "typical" plants and the ignoring of all that do not fit into a more or less preconceived notion of distinctness gives a false impression of what actually occurs in nature. Further such statements as "I can match a dozen of Dahlstedt's species on my lawn," when unsupported by full evidence, reflect adversely on the speaker or writer rather than on Dahlstedt. Sufficient preliminary observations and experiments have now been made at Kew to show the desirability of detailed examinations of populations of *Taraxacum* combined with as much cultural research as space and time allow. Herbarium methods are essential but by themselves quite insufficient for solving the problems of British Taraxaca, even from a taxonomic standpoint alone. The difficulties of field work are very great owing to the plasticity, with age and micro-habitat, of every biotype. By a combination of methods they can be gradually overcome.

Preliminary studies make it clear that populations in natural or semi-natural habitats are much more uniform (biotypically) than disturbed, waste, or ruderal areas. A sand-dune area, a chalk-grassland, or a limestone ridge has, within the limits of the writer's experience, a much less diversified dandelion population than many a much smaller area of broken field, waste ground, or newly made up railway embankment. Sukatschew (47) has shown how a biotype from the Crimea failed at Leningrad and how three different biotypes from the same lawn at Leningrad behaved very differently in dense and sparse, mixed and pure cultures. In the south of England biotypes of the section Erythrosperma often occur in closed chalk or limestone grassland uniformly

over considerable areas. Arable land reverting to rough pasture or a derelict building plot will usually yield several biotypes of the Vulgaria section.

FUTURE RESEARCH.

In a flora so well known in general outline as that of the British Isles future research must be a concentration on special problems on more intensive lines and by other methods than are at present popular. It is probable that any genus with a fairly wide distribution has much of interest to yield to such intensive research, especially if it can be carried out by the co-operation of persons trained in different branches of botany but on the same material. The taxonomist, the cytologist, the histologist, and the ecologist have much to gain by such co-operation. Such research will not only throw additional light on the constitution, origins, and history of the British Flora but it will also yield other results of wide biological importance. While no superior claim is made in this respect for *Taraxacum*, it is hoped that it has been made clear that the genus offers excellent material, in some important ways different from that provided by most other genera, for concentrated investigation, much of which can be carried out without undue expense.

It is suggested that research should include the following:—

1. A careful investigation of wild populations on a statistical basis. Account should be taken not only of the biotypes present and of the proportional and actual numbers of their individuals but also of their thickness on the ground and their age and habitat plasticity. The populations chosen for investigation should at first be small and clearly delimited but areas should gradually be increased in size.
2. More extensive field studies undertaken with the aim of tracing the geographical and ecological ranges of biotypes. The morphologically better differentiated biotypes should be investigated first.
3. Character-combinations and character distribution should be carefully recorded with all relevant details.
4. Evidence for mutations, sexuality, and hybridization should be sought.
5. Cultural experiments by growing rows of plants from seeds from single heads should be carried out to the limit of available space and time. Records should be kept, by means of notes, photographs, and series of fully annotated herbarium specimens, especially of age and seasonal plasticity. At Kew, for seed-production, the flowering and fruiting heads have to be protected from sparrows. These birds will attack and eat out the immature fruits from ripening heads and will crack open and extract the seed from ripe cypselas in a very neat manner.
6. Castration experiments should be made on all biotypes in the cultures. In making these certain precautions have been found necessary. A sharp razor-blade and a straight cut across the unopened

fairly young capitulum at a sufficiently low level will remove anthers and stigmata without damaging the ovary. After this operation the cut heads must be protected from desiccation by covering the plant with a bell-jar or flower-pot and sometimes protection from ants and slugs is necessary.

In all experimental work the utmost care in the numbering of plants and rows is necessary. It is also essential to keep a close watch for "rogues" and to remove them and any doubtful plants as soon as they are noticed.

THE TAXONOMIC STATUS AND NOMENCLATURE OF THE BIOTYPES.

The most diverse opinions have been expressed, and put into practice, regarding the status of *Taraxacum* biotypes. If they be treated as species, subspecies, or varieties the International Rules of Nomenclature apply to their naming. There are, however, real difficulties in accepting the usual, and for most genera and many purposes the fairly practical, taxonomic hierarchy of species and intraspecific categories. From the standpoint of genetic isolation the biotypes are species; from the standpoint of character-combinations, morphological differences and similarities, and ecology, the biotypes, within any one section and within any one distributional area at least, are varieties of one or a few species. There is little doubt that if they were sexually reproduced they would be considered as varieties (of one or a few species) or merely regarded as various segregating character-combinations. The widespread and regular occurrence of apomixis puts them into a category distinct from "species" and "variety." Most systematists acknowledge that species and varieties are not categories of uniform taxonomic (or any other) value, but many do try to make them as uniform as possible for any one line of research. Hence it seems really desirable, in order to clear the orthodox taxonomic categories in a slight degree, to exclude the known or reasonably probable apomicts. On the other hand, they cannot be ignored by the taxonomist studying a flora so well known as that of the British Isles.

The International Rules of Nomenclature state that every plant must belong to a species, unless it be a hybrid between two species or a chimaera. Unfortunately it is not clear whether by "hybrid" is meant an F_1 only or whether segregates and backcrosses are included. On one interpretation there are probably very few "species" indeed in the British Flora!

Turesson (48) has suggested that the term *agamospecies* should be given to "an apomict-population the constituents of which, for morphological, cytological or other reasons, are to be considered as having common origin. (Illustrated by *Alchemilla vulgaris*, *Antennaria alpina*, etc.)." Again (49), it is stated "According to Turesson, however, *Potentilla argentea* is to be considered as an asexual species, an agamospecies, within which it is possible to delimit a number of *formae apomictae*."

This scheme is theoretically, and for some apomictic groups probably practically, a considerable advance on any previously suggested. The difficulty of applying it to British Taraxaca, with our present state of ignorance, is in defining the limits of the agamospecies into which the biotypes (formae apomictae) should be grouped. This difficulty may well be resolved with increasing knowledge, and tentatively, as a preliminary working scheme, the recognised sections might well be considered as agamospecies. A less important objection is to the use of the term "formae." Some authors have used the term "formae" for phenotypes owing their distinguishing characters to the action of environmental factors on one genotype. The Taraxaca biotypes are different genotypes.

Du Rietz (50, p. 362) distinguishes "four main types of species." Two of these concern us here. The *simple asexual species* includes the individual *Taraxacum* biotypes. The *compound asexual species*, or "species consisting of several, practically indistinguishable, strictly asexual biotypes." To this type belong "many of the more widely distributed apomictic species of *Taraxacum*." This scheme postulates two taxonomic units, both designated "species" within the genus *Taraxacum*. It is not quite clear whether a "compound asexual species" can include several to many "simple asexual species," *i.e.*, a species is also an intraspecific unit (which is terminologically absurd), or whether there are two grades of biotypes within the genus—1, distinguishable; 2, practically indistinguishable. For British Taraxaca it seems a much simpler and more practical scheme for obtaining data in an unbiased manner to use only the term biotype, or the term apomict where the biotype has been experimentally proved to be apomictic. For convenience the biotypes can be grouped into sections or (more or less presumed) agamospecies.

It is, then, suggested that a scheme of the following kind be *tentatively* adopted for the collection of data:—

Section Vulgaria.
(Agamospecies) *Taraxacum officinale.*
Biotypus *adiantifrons.*
,, *alatum.*
,, *alienum*, etc.

Section Erythrosperma.
(Agamospecies) *Taraxacum laevigatum.*
Biotypus *brachyglossum.*
,, *decipiens*, etc.

(Assuming the names and identifications of Druce's List, for the biotypes, are correct, as some of them may be).

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GLOSSARY OF TERMS.

Allopolyploid: Having some multiple of unlike chromosome sets; whence allopolyploidy.

Amphimixis: Reproduction by a normal sexual process, *i.e.*, by the fusion of a male gamete with a female gamete to produce a zygote.

Apogamy:	The development of some cell of the gametophyte (in Angiosperms within the embryo-sac) other than the female gamete (egg) into an embryo.
Apomict:	An individual produced by a process other than normal sexual reproduction.
Apomixis:	Production of individuals (including mere multiplication and reproduction) by a process other than that of normal sexual reproduction.
Apospory:	The elimination of spore production in the life history (also involving elimination or reduction of chromosome numbers).
Biotype:	A group of organisms of identical genetic constitution.
Chimaera:	An individual from the standpoint of physiological behaviour which, however, is composed of tissues of more than one genetical constitution.
Chromosomes:	The units of structure appearing at division of the nucleus.
Cytology:	The study of the detailed structure and behaviour of cells.
Diploid:	Having two sets of chromosomes.
Gamete:	A specialised cell functioning immediately in fertilization; whence gametic.
Genotype:	The genetic constitution of an organism.
Haploid:	Having only one set of chromosomes.
Hemicryptophyte:	A plant with perennating buds at or just below ground level.
Hexaploid:	Having six chromosome sets.
Megaspore:	(For *Taraxacum*), a young embryo-sac or a potential embryo-sac.
Parthenogenesis:	The development of an embryo from a female gamete (egg) without fertilization.
Pentaploid:	Having five chromosome sets.
Phenotype:	The definition of an organism as represented by its visible or demonstrable characters.
Polyploid:	Having some multiple of chromosome sets; whence polyploidy.
Soma:	The body, as distinct from the gametes or reproductive cells; whence somatic.
Synergid:	One of the two cells of the gametophyte closely associated in the embryo-sac with the female gamete.
Tetraploid:	Having four chromosome sets.
Triploid:	Having three chromosome sets.
Zygote:	The immediate product of fusion of a male and female gamete; the young embryo; whence zygotic.

THE VARIABILITY OF ELM FOLIAGE AND THE COLLECTION OF ELM MATERIAL FOR HERBARIA.

R. Melville, F.L.S.

The British elms have always been a source of difficulty to botanists, partly on account of the variability of the foliage even in a single individual and partly because of the ease with which the trees hybridise and produce fertile progeny. The classification of such hybrid swarms provides a difficult problem for the taxonomist and one which it is not proposed to discuss here. In making a critical survey of our native elms the question of the variability of the foliage was one that called for careful study. The method of collecting material of elms outlined below was devised to minimise the variability and facilitate the comparison of related forms.

The necessity for comparing foliage from the same type of shoot when studying elms has not been realised sufficiently in the past. Foliage of the normal branches of an adult tree differs considerably from that of epicormic shoots, proleptic shoots, and sucker shoots of the same individual. It may be as well, at this stage, to define the terms just used.

Epicormic shoots are vigorous shoots arising from the trunk and occasionally from the larger branches. They develop from dormant buds and possibly from adventitious buds, and are especially noticeable on trees that have had their lower branches lopped. Epicormic shoots are of common occurrence on elm trunks, giving rise to "the brushwood sheaf round the elm-tree bole," as Browning aptly describes them. The leaves on such shoots are more variable in size and in shape than those of normal shoots and always appear more hairy. This depends on the greater length of the simple hairs and the replacement of some or all of the glandular hairs found on the leaves of normal shoots by simple hairs. In successive years the foliage of epicormic shoots gradually changes and becomes more and more like that of normal shoots, but epicormic shoots ten to fifteen years old are often not quite normal from this point of view. This fact is important since in many cases only the foliage of such old epicormic shoots is within reach of the collector. It is essential, therefore, that if such shoots are collected the fact should be stated.

Proleptic shoots, sometimes called "Lammas shoots," are secondary growths prolonging the normal adult branches of a tree and developing after the normal growth in length for the year has ceased. The leaves of these shoots differ from normal shoots in shape and roughness. They may be compared only with similar shoots of other trees and in some cases may give a hint of the parentage of hybrid forms.

Sucker shoots arise below ground level and often on roots at some distance from the parent trunk. As with epicormic shoots, the simple hairs on the leaves and also on the branchlets are longer and more

numerous than on normal branchlets and their leaves, and the glandular hairs are less numerous. The size of leaves on suckers varies enormously from two or three times that of normal shoots on vigorous examples to very much smaller on shaded and starved branchlets. In shape the leaves are often subequal at the base and generally quite different from those of normal shoots. Owing to the wide range of form in sucker leaves of individual trees and the great similarity of suckers from several species, such shoots are not of much value in classification. Nevertheless, many elm specimens of 100 years or more ago in our national herbaria consist of a sucker shoot only and that often a starved branch with small leaves. Specimens of the latter kind are often labelled "*Ulmus minor.*"

With the epicormic, proleptic, and sucker shoots disposed of, there remain the normal adult shoots to consider. These exhibit a fair degree of variability, though less than in the other types. How can this variability be reduced to a minimum? To answer this question we must dissect our normal shoots.

The normal shoots of a tree, in the above sense, include all the adult branchlets forming the crown of the tree. If one of the branches is examined it is found to end in a more or less elongated terminal leafy shoot. Along the branch are lateral shoots of varying sizes ending similarly in elongated leafy shoots. These longer laterals bear small lateral shoots that may be called "short shoots," having usually about four to six leaves. A little consideration will show that the "short shoots" bear the bulk of the foliage of a tree, and on examination it will be found that variability is least in shoots of this kind. The conclusion may be drawn, therefore, that the short shoots will be the most valuable for taxonomic study, and in the writer's experience this is so. The terminal shoots are more variable and correspondingly less valuable.

To make the point clear, reference may be made to the excellent figures of elms in Butcher and Strudwick's *Further Illustrations of British Plants.* Here under "*U. campestris* L." are two typical short shoots of the English Elm, *U. procera* Salisb., though the artist appears to have omitted the distal leaves. These represent the normal foliage of the tree and the type that strikes the eye. The plates of *U. nitens* Moench and *U. stricta* Lindl. each show terminal shoots and do not represent the bulk of the foliage. They can be compared with one another, but not with the short shoots shown for *U. procera.*

From a consideration of the above argument, it is evident that to represent an elm satisfactorily in the herbarium a fully developed normal shoot, bearing a terminal shoot and one or more short shoots, is needed to show the mode of branching and other features. In addition, several detached short shoots should be included in the collection to represent adequately the typical foliage. This is the minimum. The other types of shoot mentioned can be added if desired, and of course flowers and fruits are necessary to complete the collection.

The genus *Ulmus* is one of several allotted to the writer for the preparation of descriptions for the new *British Flora*. The elms are not well represented in our national herbaria, and it is necessary to make collections of elms in all parts of the country to supplement the rather scanty material of this critical genus. The co-operation of members of the B.E.C. in collecting material on the lines indicated above would be a great help in bringing the work to a satisfactory conclusion. With each collection should be given the exact locality and notes on the habit of the tree, or, if possible, a photograph. A snapshot taken from a suitable viewpoint with a cheap camera is quite sufficient to show the habit. The type of soil and the geological formation are further points of interest.

In the case of unusual forms and hybrids, collections including a minimum of ten detached short shoots with all the leaves full-grown are especially desirable. These are needed to obtain the measurements necessary for determining the mean leaf shapes by the method described in *Annals of Botany*, N.S. I, No. 4 (1937), 673-80. For this purpose, the distal and subdistal leaves of the short shoots should be entire and pressed flat so that the outline of the leaves may be drawn accurately.

The writer will be glad to receive collections of either type, which should be addressed to him at the Royal Botanic Gardens, Kew.

CYPERUS LONGUS L. IN WILTSHIRE.

B. Gullick, B.Sc.

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This plant appears to have been recorded at one site only in the county of Wilts, where the possibility of its being native may be open to some doubt, and where it now seems to be extinct. This place is Boyton, near Codford, in South Wilts.

In *Wilts. A.M.*, *14*, 80 (September 1873), Dr T. B. Flower stated that it was "first discovered by the late A. B. Lambert, Esq., and Professor Don, in 1829, growing in great luxuriance and profusion, but of late years this elegant species has considerably decreased in quantity, through the rapacity of collectors." To this is appended, as a footnote, a brief biography of A. B. Lambert, Esq. He was born in 1761, and attached himself early in life to botanical pursuits and joined the Linnean Society at its foundation. On succeeding to his paternal estate (Boyton Manor) he was enabled to indulge his taste for botany more freely, and laboured with great ardour and success to increase his herbarium, which at length acquired the character of being one of the most valuable and important private collections in existence, and of which Professor Don acted as Curator for many years. It included the largest carpological collection perhaps ever made by a private botanist.

It is this last remark which raises suspicions. Mr Lambert in 1829 had reached the age of 68. In the *New Botanist's Guide* by H. C. Watson, Vol. I, 1835, page 46, is "*Cyperus longus*. I hear that it has been discovered growing abundantly near Mr Lambert's (Boyton) in Wilts. W. C. Trevelyan, MSS."; and in Vol. II, 1837, page 566, it is stated that "in 1829 Mr Peete found about a quarter of an acre of *Cyperus longus* within a quarter of a mile of Boyton House." It seems incredible that a man who, in early life, was interested in botanical pursuits could have overlooked such a rarity within a quarter of a mile of his own home, every year until he reached the age of 68. On the other hand, the carpological collection may have contained a surplus of certain seeds, and the place of deposit of unwanted matter at that date is not known.

In the *Flora of Wilts*, by T. A. Preston, 1888, 324, the entry includes "Rogers, *Exchange Club Report*, 1873, p. 26; still there 1884, Hussey." The note in the *Exchange Club Report* cannot be checked, so it seems that a wrong reference is given. It appears that this entry in the *Flora* is the last published record of the occurrence of this plant in Wilts.

About ten years ago an effort was made to ascertain if it was still growing at Boyton, and the following information was collected from Mrs Steward by the Hon. Mrs Campbell of Wilton. Some years ago a botanist (who is now believed to have been Mr T. H. Green, of Bath) called on the Rector of Boyton, then Canon Steward, for information

about the *Cyperus longus*, but it was not at that time known there, nor could it be found by the botanist. Subsequently, Canon Steward took a piece of meadow into the Rectory garden, and made a little pond, and in the following year a plant which Mrs Steward thought was the *Cyperus* came up spontaneously on the edge of the pond, but as they did not know the name of the botanist they could not inform him.

In 1928, the Rev. E. Graham, then Rector, said that he was told of the *Cyperus* in the pond before he came, but that he had never seen it, nor could it be ascertained that anyone else had seen it recently, so it was concluded that *Cyperus longus* was then extinct in Wilts. However, on 14th September, 1934, the writer made personal search and found the pond close to and nearly opposite the main entrance to Boyton Manor. At one end was a small clump of *Cyperus longus*, flowering, but short and the spikes very small and pale in comparison with specimens from elsewhere. It was growing with bamboos, reedmaces, etc. In that year it was seen by the Hon. Mrs Campbell and others. The adjoining meadows and stream sides were searched, but no *Cyperus* could be found, so it was considered possible that it might have been planted in the pond. This, however, does not appear to be the case.

Boyton Manor House is situated at the foot of the downs, close to the river Wylye. In the grounds is a small lake from which a stream drains through the water meadows before joining the river. There was no sign of *Cyperus* in the lake. In the immediate vicinity on the north are water meadows, not likely to have been disturbed by camps during the War, as were the fields around Codford.

In 1936 the Rev. P. H. B. Bridson, then Rector, related that the story as told him was that in Canon Steward's time, about 1920, an American botanist called and asked to see the *Cyperus*, saying that it was near the Church. They tramped around looking for it in vain, and at last Canon Steward suggested that they should give it up and have tea. They came through the lower Rectory garden and the botanist said, "Why, there it is, growing in the pond." Canon Steward had recently made the pond, and thought that it was a weed coming up. Mr Bridson could not ascertain that it had been known elsewhere in the village.

Unfortunately no *Cyperus* was seen flowering in the pond in 1935, nor in 1936, but the reedmaces had increased and had perhaps crowded it out. Thus it seems that *Cyperus longus* is again extinct in Wilts, yet there may still be dormant seeds which will germinate in due course.

There is a specimen in Dr Druce's Herbarium labelled Boyton, Wilts, without date or collector's name, but Dr Druce had added "Hb. Ansell, 1844." In the British Museum (Natural History) are two specimens from Boyton, one collected by F. I. White, 1838 (Soc. Bot. Edin.), and one from the Herbarium of Edward Forster, without date but received by the Museum in 1849. In the Herbarium at Kew are four sheets—one communicated by F. I. White—Coll., Sept. 1838; one in Herb. Borrer collected Oct. 1833, with label "in a small meadow where some

farm buildings stood, which were burnt down about thirty years ago"; one collected by W. A. Leighton, 1830; and one communicated by G. S. Henslow, no date (ex Herb. Ball).

There is no specimen in the Salisbury Museum Herbarium, but in that of the W.A.S. at Devizes is one labelled "Boyton Meadow, Oct. 1873." W. Moyle Rogers"; and another good sheet, "Boyton, W. Hussey," not dated, but probably 1884, cf. *Flora*. Doubtless many other Herbaria contain specimens, and it would be interesting to know whether any are dated after 1884.

THE CHAROPHYTA IN WALES.

A. E. Wade, F.L.S.
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The earliest records for Charophyta in Wales appear to be those in the *Botanist's Guide* by Turner and Dillwyn, published in 1805, where *Nitella flexilis* is recorded under the name of *Chara flexilis* for the counties of Anglesey, Denbigh, and Glamorgan, and *Chara hispida* for the counties of Anglesey, Flint, and Glamorgan. Some of these early records for *Nitella flexilis* Ag. may refer to *Nitella opaca* Ag., whilst records for *Chara hispida* may be referable to one or other of the related species recognised at a later date. A specimen of *Nitella opaca* Ag., collected by Hugh Davies in Anglesey in 1795 and labelled "*Chara flexilis*," is in the British Museum Herbarium. Hugh Davies in his *Welsh Botanology* published in 1813 adds a third species for Anglesey, *Chara vulgaris* L., with a variety "Var. 2, Delicate Stonewort," probably *Chara fragilis* Desv. Few further additions were made until towards the end of the 19th century, when the late J. E. Griffith added several species from Anglesey. Since then numerous other botanists have from time to time added to our knowledge of the Welsh Charophyta.

Excluding probable errors fifteen species of Charophyta are recorded from Wales. The following table gives the number of species for each county. Doubtful or unconfirmed records are placed in brackets.

Monmouth 2 (1).	Radnor 2 (1).	Cardigan 3.	Caernarvon 6 (1).
Glamorgan 8 (1).	Carmarthen 5.	Montgomery 1.	Denbigh 2 (3).
Brecon 2 (1).	Pembroke 8 (1).	Merioneth 2 (1).	Flint 3 (1).
			Anglesey 14.

The occurrence of fourteen of the fifteen known Welsh Charophyta in Anglesey is doubtless due to the large number of lakes and pools, most of which are particularly suitable for the growth of these plants. Of the five rarer species, *Nitella tenuissima* (Desv.) Kuetz., *Chara rudis* (Br.) Leonh., and *C. aculeolata* Kuetz. are confined to Anglesey. *C. desmacantha* Gr. & B.-W. is found only in Anglesey and Pembrokeshire, and *Nitella hyalina* (DC.) Ag. is confined to Llyn Idwal in Caernarvonshire.

County records additional to those given in the *Comital Flora* are indicated by an asterisk.

Thanks are due to Messrs G. O. Allen, J. F. G. Chapple, A. A. Dallman, A. Wilson and N. Woodhead for records, and to the staff of the Botanical Department of the Natural History Museum, S. Kensington, for facilities to consult the National Herbarium.

872/2. Nitella opaca Ag.

Locally common in pools, lakes and streams.

Glamorgan: Clyne Common, W.R.L., *Journ. Bot.*, 1886, 377. Llandough near Cowbridge and Welsh St Donats, H.J.R., *Journ. Bot., Suppl.*, 1907, 73. Reynoldston, H.J.R., *Journ. Bot.*, 1909, 411. Neath, P.S.J., 1932, *Hb. N.M.W.*

Radnor: Presteigne, D., *B.E.C. 1923 Rep.*, 225 (1924).

Carmarthen: Llanelly, D.H., *B.E.C. 1912 Rep.*, 221 (1913).

Cardigan: Aberystwyth, W.H.L.

Montgomery: J.E.V., 1880, *Journ. Bot.*, 1884, 5.

Merioneth: Stream near the shore, Duffryn, G.R.B.-W., 1896, *Hb. Druce.*

Caernarvon: Llyn-an-afon, C.B., 1884, *Hb. N.M.W.* Llyn Idwal, J.E.G., 1884, J.E.L., 1931, *Hb. N.M.W.* Llyn Padarn, C.B., 1888, *Hb. N.M.W.* Cwm-y-glo, Lyn Glasfryn, and Nant Ffrancon, under Maes Caradog, J.E.G., *Fl. Angl. and Caern.*

Anglesey: Between Llyn Llwydiarth and Cors-y-Wiber, H.D., 1795, *Hb. Mus. Brit.* Llyn Frogwy, Llyn Dinam and Cors Bodeilio, J.E.G., *Fl. Angl. and Caern.*

The counties of Monmouth, Brecon, Pembroke and Denbigh are also given in the *Comital Flora*. I have been unable to trace the source of these records and suspect that they were inserted in error.

872/3. Nitella flexilis Ag.

Rare. Lakes and pools.

Glamorgan: (Crymlyn Bog, J.W., *Turner and Dillwyn, Bot. Guide*, I, 298). Mynydd-y-Glew, E.V., 1926, *Hb. N.M.W.* Kenfig Pool, E.V., 1927, *Hb. N.M.W.*

Carmarthen: Carmarthen, D.H., 1922, *Hb. Druce.* [Add to *C.F.*: see *B.E.C. 1923 Rep.*, 225 (1924), for previous record.—Ed.]

**Caernarvon*: Llyn Gader and Llyn Glasfryn, J.E.G., *Fl. Angl. and Caern.*

Denbigh: (Llyn Aled, Llansannon, J.W.G., *Turner and Dillwyn, Bot. Guide*, I, 167. Mill stream, Aled Valley, near Llansannon, *Hb. Wood*).

Anglesey: (Ditches in Sybylltir demesne, H.D., *Welsh Bot.*). Bodgylched, J.E.G., 1885, *Hb. N.M.W.* Llyn Bodforth, J.E.G., *Journ. Bot.*, 1887, 146. Llyn Frogwy, J.E.G., *Fl. Angl. and Caern.*

Early records of *N. flexilis* are doubtful owing to confusion with *N. opaca.*

872/5. Nitella translucens (Pers.) Ag.

Rare. Lakes and ponds.

**Pembroke*: Templeton, J.E.A., 1933. *Hb. N.M.W.*, 1934, *Hb. Mus. Brit.*

**Denbigh*: Chirk Castle Pond, N.W., 1936, *Hb. U.C. Bangor.* A poor, immature specimen, but apparently *Nitella translucens.*

Anglesey: Llyn Penrhyn, Llyn Treflas, and near Valley, J.E.G., *Fl. Angl. and Caern.*

872/8. Nitella tenuissima (Desv.) Kuetz.

Rare. Pools in peaty places.

Anglesey: Cors Bodeilio, 1882, near Lligwy, 1885, and Cors Ddraenog, 1885, J.E.G., *Hb. N.M.W.* Llanffinnan, C.B., 1884, *Hb. N.M.W.* Llyn-wyth-eidion, J.E.G., *Fl. Angl. and Caern.*

872/10. Nitella hyalina (DC.) Ag.

Very rare. Lakes.

**Caernarvon*: Llyn Idwal, N.D.S., 1913, det. G. O. Allen.

873/3. Tolypella glomerata (Desv.) Leonh.

Rare. Pools and lakes.

Glamorgan: Crymlyn Burrows, W.R.L., 1886, *Hb. Mus. Brit.*

**Carmarthen*: Laugharne, E.F.N., 1937.

Anglesey: Llyn Coron, *Hb. Borrer.* Near Penmon, R.W.P., 1892, *Hb. Mus. Brit.* Newborough Common, J.F.G.C., 1937, *Hb. N.M.W.*

Var. erythrocarpa G. & B.-W.

Anglesey: Llyn Coron, J.E.G., 1893, *Hb. N.M.W.*

876/3. Chara vulgaris L.

Frequent. Pools, lakes and ditches.

Monmouth: Llanwern, S.H., *Fl. Mon.* Sandy Way, near Chepstow, 1892, Magor, 1894, and Roggiett, 1894, W.A.S., *Hb. N.M.W.* Near Rumney, A.E.W., 1922, *Hb. N.M.W.* Dixton Newton Parish, near Monmouth, W.W., 1891. *Hb. Mus. Brit.* Near Rossfield Farm and St Arvans, W.A.S., *Fl. Chepstow.*

Glamorgan: Crymlyn Burrows, W.R.L., *Journ. Bot.*, 1886, 377. Port Talbot and Porthcawl, H.J.R., *Journ. Bot. Suppl.*, 1907, 73. Sutton, H.J.R., *Journ. Bot.*, 1909, 411. Llandough, near Cardiff, 1920, and Roath Park, Cardiff, 1922, A.E.W., *Hb. N.M.W.* Cogan Marshes, E.V., *Glam. County Hist.*

Brecon: Llangorse Lake, A.E.W., 1925, *Hb. N.M.W.*

Carmarthen: Pembrey, D.H., *B.E.C. 1912 Rep.*, 221 (1913).

Pembroke: Tenby, J.E.A., 1928, *Hb. N.M.W.*

Cardigan: Borth, E.S., 1881, *Hb. N.M.W.*

Caernarvon: Near Llandudno, C.B., 1889, *Hb. N.M.W.*

Flint: In the "drowned" clay holes at Cefn-du brick works, near Rhyl, W.H., 1910. Tydn-y-gwynt, Rhyd-y-mwyn, C.W., 1916, *Hb. N.M.W.*

Anglesey: Llyn Coron, J.E.G., 1893, *Hb. N.M.W.*

The counties of Radnor, Merioneth and Denbigh are also given in the *Comital Flora*. I have no definite record for these counties: confirmation is therefore desired.

b. var. LONGIBRACTEATA Kuetz.

Monmouth: Itton, W.A.S., 1905, *Hb. N.M.W.*

Glamorgan: Porthcawl, H.J.R., *Journ. Bot. Suppl.*, 1907, 73.

Cardigan: Aberystwyth, E.S., 1881, *Hb. N.M.W.* Borth, E.S., 1881, *Hb. Druce.*

Flint: Pools on the marsh below Burton, A.A.D., *Journ. Bot.*, 1908, 227.

Anglesey: Llyn Coron and between Valley and Cleifiog Farm, J.E.G., *Fl. Angl. and Caern.*

c. var. PAPILLATA Wallr.

Glamorgan: Porthcawl, H.J.R., *Journ. Bot. Suppl.*, 1907, 73.

Anglesey: Between Pentraeth and Llangefni, C.B., 1884, *Hb. Mus. Brit.* Llyn Coron, G.C.D., *B.E.C. 1918 Rep.*, 412 (1919).

876/4. CHARA RUDIS (Br.) Leonh.

Rare. Pools.

Anglesey: Cors Bodeilio, J.E.G., 1882, *Hb. N.M.W.* Llyn-wyth-eidion, J.E.G., *Journ. Bot.*, 1895, 291. Pool by Llyn Maelog, I.M.R., 1925, *Hb. N.M.W.* Cors Goch, J.F.G.C., 1937, *Hb. Druce.*

876/5. CHARA HISPIDA L.

Rare. Pools.

Glamorgan: (Crymlyn Bog, J.W., *Turner and Dillwyn, Bot. Guide*, I, 298).

Pembroke: Bosherston Pools, H.A.H., 1925, *Hb. N.M.W.*, J.F.G.C., 1937. Stackpole, C., *B.E.C. 1930 Rep.*, 379 (1931).

**Flint*: About Rhyd Marsh, J.W.G., Turner and Dillwyn, *Bot. Guide*, I, 291. In the "drowned" clay holes at Cefn-du brick works near Rhyl, W.H., 1910.

Anglesey: (Near Llyn Maelog Hotel and Llyn Dinam, J.E.G., *Fl. Angl. and Caern.*). Newborough Common, J.F.G.C., 1937. Rhosneigr, H.G.

J. E. Griffith's records may refer to *C. rudis*, which has been collected in recent years near Llyn Maelog.

876/7. CHARA CONTRARIA Kuetz.

Rare. Pools and lakes.

Glamorgan: Oxwich, H. & J.G.. and Kenfig Pool, H.J.R., *Journ. Bot. Suppl.*, 1907, 73.

Anglesey: Llyn Coron, J.E.G., 1881, *Hb. N.M.W.* Llyn Dinam, J.E.G., *Fl. Angl. and Caern.* Holyhead, J.E.G., 1884, *Hb. Mus. Brit.* Newborough Warren, T., 1932, *Hb. Druce.*

876/11. Chara aculeolata Kuetz.

Rare. Pools and streams.

**Pembroke*: Lillypool, Bosherston, J.F.G.C., 1937.

Anglesey: Cors Bodeilio, J.E.G., 1883, A.W., 1930, *Hb. N.M.W.* Llynwyth-eidion, 1885, J.E.G., *Hb. N.M.W.* Between Pentraeth and Llangefni, C.B., 1884, *Hb. Mus. Brit.* Newborough Common and Cors Goch, J.F.G.C., 1937.

876/12. Chara aspera Willd.

Locally common. Pools and lakes.

Glamorgan: Oxwich, H.J.R., *Journ. Bot. Suppl.*, 1907, 73. Kenfig Pool, E.V., 1925, *Hb. N.M.W.* Cardiff, *Hb. Mus. Brit.*

Carmarthen: Gwendraeth Canal, J.M., 1846, *Hb. R.I.S.W.* [Add to *C.F.*: see *J.B.*, 71 (1907), for previous record.—Ed.]

**Pembroke*: Pwll Trefeiddan, between St Davids and Rhosson, W.R.L., 1900, J.G., 1914, *Hb. Mus. Brit.*

Cardigan: Borth, E.S., 1881, *Hb. N.M.W.*

Caernarvon: J.G. & G.R.B.-W., *Brit. Charophyta*, II, 52.

Anglesey: Llyn Coron, 1881, Cors Bodeilio, 1882, Llyn Bod-gylched, 1885, J.E.G., *Hb. N.M.W.*

b. var. subinermis Kuetz.

Cardigan: Borth, E.S., 1881, *Hb. N.M.W.*

Anglesey: Llyn Hendref and Llyn Coron, J.E.G., *Fl. Angl. and Caern.*

c. var. lacustris H. & J. G.

Glamorgan: Kenfig Pool, E.V., *Glam. County Hist.*

d. var. capillata A. Br.

Anglesey: Llyn Coron and Llyn Hendref, J.E.G., *Fl. Angl. and Caern.* Near Holyhead, W.W., 1828, *Journ. Bot.*, 1880, 130.

876/13. Chara desmacantha Gr. & B.-W.

Rare. Pools.

Pembroke: Groves and Bullock-Webster, *Brit. Charophyta*, II, 55.

Anglesey: Cors Goch, J.F.G.C., 1937.

876/16. Chara fragilis Desv.

Locally frequent. Pools and slow-flowing streams.

**Monmouth*: Trefil, A.E.W., 1924, *Hb. N.M.W.*

Glamorgan: Pilton Green, Crymlyn Burrows, Port Talbot, Porthcawl and Roath, H.J.R., *Journ. Bot. Suppl.*, 1907, 73. Oxwich, E.V., *Glam. County Hist.*

**Pembroke*: Head of Penally Bog, H.T., 1867, *Hb. Mus. Brit.* Pool on Newgale sands, H.N.R., 1882, *Hb. Mus. Brit.*

Caernarvon: Llandudno and Great Ormes Head, J.E.G., *Fl. Angl. and Caern.* Near Porth Neigwl, J.L.W., *Fl. Angl. and Caern.*

Anglesey: Cors Bodeilio, J.E.G., 1883, *Hb. Mus. Brit.* Afon Maelog, J.E.G., *Fl. Angl. and Caern.*

Hugh Davies's record for *Chara vulgaris* var. 2 from Trewilinot is probably referable to *C. fragilis*.

b. var. Hedwigii (Bruz.) Kuetz.

Anglesey: Afon Llangefni, J.E.G., 1889, *Hb. N.M.W.* In the *Flora of Anglesey and Caernarvon* as var. *fulcrata* Gant.

876/17. Chara delicatula Ag.

Locally common. Lakes, pools and ponds.

Glamorgan: Welsh St Donats and Merthyr Tydfil, H.J.R., *Journ. Bot. Suppl.*, 1907, 73. Mynydd-y-Glew, A.E.W., 1921, *Hb. N.M.W.* Riddelsdell's record for Welsh St Donats presumably refers to the Mynydd-y-Glew locality.

**Brecon*: Pool at the base of the Brecon Beacons, J.F., *Journ. Bot.*, 1886, 22.

Pembroke: Crunwere, R.T., *B.E.C. 1924 Rep.*, 605 (1925). Lillypool, Bosherston, J.F.G.C., 1937.

Merioneth: Near Dolgelly, J.G., *Journ. Bot.*, 1881, 353. As "*C. fragilis* approaching var. *barbata*."

**Denbigh*: Small pond below "Whalley's Folly" between Trevor and Llangollen, "approaching the var. *barbata*" H. & J.G., W.W., *Journ. Bot.*, 1890, 189.

Anglesey: Cors Bodeilio, 1882, Llyn-wyth-eidion, and Llyn Coron, 1893, J.E.G., *Hb. N.M.W.* Cors Hendref, J.E.G., *Fl. Angl. and Caern.*

b. var. barbata (Gant.) Gr. & B.-W.

Radnor: Radnor, A.L., 1881, *Journ. Bot.*, 1883, 20.

Pembroke: Groves and Bullock-Webster, *Brit. Charophyta*, II, 68.

**Flint*: Cwm, J.A.W., 1901, *Hb. N.M.W.*

Anglesey: Cors Bodeilio, J.E.G., 1882, *Hb. N.M.W.*, J.F.G.C., 1937. Llyn Coron, J.E.G., *Fl. Angl. and Caern.*

(*Chara fragilis* and *Chara delicatula* were inadvertently omitted from the *Comital Flora*, but the records above marked with an asterisk are additional to the list of records prepared by Dr Druce for publication.)

The following doubtful records have been omitted:—

Nitella gracilis (Sm.) Ag. "Llyn Idwal, W. Wilson," Hooker, *English Flora*, V, p. 246, 1833. This was probably *Nitella hyalina* (DC.) Ag. found there by N. D. Simpson in 1912.

Chara tomentosa L. "On a bog nearly opposite the house of Alyn Bank, near Mold, Flintshire, Mr Griffiths." Withering *Arrangement of British Plants*, ed. 7, II, p. 2, 1830.

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Hb. N.M.W. Welsh National Herbarium, National Museum of Wales, Cardiff.

Hb. R.I.S.W. The Herbarium of the Royal Institution of South Wales, Swansea.

Hb. U.C. Bangor. The Herbarium of the University College, Bangor.

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A.W.=A. Wilson.
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C.B.=Charles Bailey.
C.W.=C. Waterfall.
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H.G.=H. Garnett.
H. & J.G.=H. & J. Groves.
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H.N.R.=H. N. Ridley.
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REVIEWS.

Clarke, W. G. In Breckland Wilds. Second Edition revised and rewritten by R. Rainbird Clarke, B.A. Pp. vi + 200 with 19 photographic illustrations and pictorial map. Cambridge: W. Heffer & Sons, Ltd., 1937; 12/6 net.

The richness of the flora of the Breckland district of the Norfolk-Suffolk border has long been familiar to British botanists, and no apology is needed for bringing a general topographical work including archaeology as well as all branches of Natural History of the district to their notice. The chapter on the flora contains an outline of the ecology and plants of the district and is more accurate than is usual in such works. The author wisely finds it unnecessary to postulate any ancient association with marine conditions to explain the presence of plants characteristic of the coast, and he rightly stresses the great importance of the calcium carbonate content in the soil as influencing local variations in the richness of the flora. The remainder of the work dealing with the geology and ornithology, the past history of Breckland cultivation, modern afforestation, and the navigation of the rivers contains much material of importance for a proper understanding of the flora of the area. The appendices include a very full Bibliography and a list of "Special Breck Plants." *In Breckland Wilds* should be in the library of every naturalist interested in this fascinating area.

J. E. Lousley.

Drabble, Hilda. Plant Ecology. Pp. 142 with 12 plates (24 photographs). London: Edward Arnold & Co., 1937; 7/6 net.

In recent years great strides have been made in the scientific study of plants in their natural homes so that, while a brief chapter in a general botanical text book was sufficient thirty years ago, something better is now both welcome and necessary. The author of this little book has summarised in a very readable form much of the work of the past thirty years.

The first part, which is devoted to a general summary of physical and biological factors which react on a plant, occupies a third of the book.

The other part is devoted to a description of various plant communities, and excellent summaries though some of these are, one cannot help feeling that there is often a general lack of contact between the author and the localities described. This is very noticeable in the chapters on Mountains, Fen, and Marshes There is, for example, a strange mix-up of the mountain plant communities of Wales, Yorkshire, and Scotland that should have been kept quite separate. The account of the formation of fen, salt marsh, and estuary are hardly accurate. The mud which is deposited in an estuary does not come from the river bed but from the surrounding land. There is also no mention of plants in running water and one would have thought that

the inaccurate statement that water plants absorb dissolved salts through stems and leaves would not have found a place in an up-to-date book. The group of rootless plants which float near the surface because the water is too deep for them to be rooted, scarcely fits in with the known distribution of duck-weed and frog-bit.

The most unsatisfactory part of the book, however, is the marked inconsistency in citing the names of the plants. Sometimes only common names are used—they may even be wrong ones, as winter-cress for *Pyrola*—sometimes the latin name or merely the generic name and sometimes both English and Latin appear. *Vaccinium Myrtillus* is called Blaeberry in one chapter and Bilberry in another. This is a great pity as it is difficult enough to persuade the beginner to appreciate the value of the scientific binomial and this kind of citation does not help.

Although errors must creep into the most carefully prepared book, this one has too many to be overlooked. The worst is *Salicornia* for *Suaeda*, but many others occur and the small list of errata at the front could well be expanded to a page. There is no doubt, however, that with all its defects this book will stimulate field observation and for that alone it is very welcome.

R. W. Butcher.

Holmes, E. J., and Gibbs, R. D. A Modern Biology. Pp. 272 with 163 figs. Cambridge: at the University Press, 1937; 3/6 net.

There has been, within recent years, an increasing tendency in teaching to emphasize the resemblance between the interactions of plants and animals rather than to teach botany and zoology as separate and unrelated subjects. Further, much of the older, often rather scrappy and unsatisfactory, presentation of biological data and problems under the title of "Nature Study" is being replaced by basically sounder methods dignified by the term "biology." In many ways these changes are signs of desirable progress, but there are certain dangers to be avoided and disadvantages which may become apparent if the change involves throwing over what was desirable in the older methods. One danger is that zoologists may demand and obtain the lion's share of the subject, which would then become zoology with a small botanical appendix. Again, some of the old Nature Study did encourage real acquaintance with plants and animals as organisms of man's environment. Much modern biological teaching becomes limited to the reading of text-books and laboratory work. That students (even children) should learn to use books and should be submitted to the exact discipline of the laboratory is granted; that training should be limited or almost limited to pre-arranged experiments and to what others have abstracted is quite unsound.

The new direction in teaching, largely guided by syllabuses and examination papers, has resulted in the appearance of new text-books for teachers and students. The one noticed here has many valuable features. Its format is agreeable, it is well illustrated, it keeps a fair

balance between plants and animals, and shows the close relationship of biology to human affairs. One would have liked more diagrams in perspective. Students in a laboratory rarely have binocular microscopes available for their use and often their microscopic work is limited to the drawing of sections or of objects viewed as two-dimensional. Such a diagram as that, on p. 26, of half a *Spirogyra* cell is far more suggestive than that on the opposite page showing stages of conjugation. Within its limits of subjects the book usefully amalgamates structure and function, both for animals and plants. At the end of each chapter are numerous suggestions for practical work. Most of these suggestions are excellent. It is, however, probable that the student would need much more help and guidance than is given in the text to carry out a reasonable number of the experiments satisfactorily without spending far more time than is allowed in school time-tables.

A few of the comparisons made between plants and animals may lead to erroneous conclusions unless certain fundamental differences are explained by the teacher. This applies especially to such comparisons as that of the " skeletons " and of water balance in animals and plants.

The authors state that their chief difficulty has been in knowing what material to include and what to exclude. On this subject both teachers and reviewers are likely to hold a wide range of opinions. Very little is said about germination, and relatively little about flower, fruit, and seed structure. These are matters not only of great biological interest in themselves but also fundamental to a proper understanding of the problems of evolution and heredity. The most serious gap appears to be the absence of even references to ecology and classification. Certainly neither is given in the index. Properly introduced to students, either of these divisions of biology can be used as a nucleus around which most of the rest of biology can be built.

These criticisms indicate the limits, and rather serious limits, of this text-book. As a laboratory or class-room manual, when supplemented by able teaching, it should prove extremely valuable, so long as real field studies are also undertaken.

W. B. Turrill.

James, W. O., and Clapham, A. R. The Biology of Flowers. Pp. vi + 116 with 70 figs. Oxford: Clarendon Press, 1935; 8/6.

In this book flowers are described in relation to their main function, that of providing a mechanism for the production of the seeds by which flowering plants reproduce themselves.

The first five chapters deal with flowers in general; their association in the inflorescence: their parts, including the structure of stamens, the development of pollen and ovules, also the developmental relations of the parts in relation to the ultimate form of the flower: pollination—the general relations between the method of pollination and the flower as regards structure, colour, nectaries, self- and cross-fertilization: fruits—their types and dispersal.

Next follows a short chapter dealing with the best methods of examining, dissecting and drawing flowers, introducing the main body of the work, in which 31 flowers are described in detail, with large clear drawings and floral diagrams. No systematic classification is attempted, but a sufficiently wide range of types is selected to illustrate the great variety of structure, pollination mechanism and general biological relations through which the function of seed production is fulfilled. A tabular summary, glossary of terms, and short bibliography complete the book.

With the possible exception of the oak catkin the drawings are excellent, and anyone who, after personally examining some of the types here dealt with, uses the same methods for the study of other flowers, will have a good guide to a fascinating and unlimited field. The production is of the excellence associated with the Clarendon Press.

A. J. Wilmott.

Wilson, Albert, F.L.S., F.R.Met.Soc. The Flora of Westmorland. Pp. viii + 413, with 38 photographic plates and 1 map. Arbroath: T. Buncle & Co. Ltd., 1938; 25/- (to be obtained from the author: A. Wilson, Tir-y-Coed, Ro Wen, Conway).

It is rather remarkable, in view of the attractive nature of the country and the richness of its vegetation, that no complete work on the Westmorland Flora should previously have appeared. J. G. Baker's *Flora of the Lake District*, published over 50 years ago, included the western portion of the county but the greater part lay beyond the boundaries of that work. This gap in the series of county Floras has now been admirably filled by Mr Wilson, whose work not only brings together all the records for flowering plants and vascular cryptogams but also deals equally fully with the hepatics, mosses and lichens.

Few counties are as fortunate as Westmorland in suffering so little destruction to their floras through industry and town expansion. The greater part of the county consists of pasture and moorland and presents a great diversity of surface both as to elevation and geological nature. The western fells of the Lake District are composed of hard slates, grits and flags of Ordovician and Silurian age, whilst the Pennine hills are made up of Carboniferous grits and limestones. Considerable areas of limestone pavement and scars in the south and east central part of the county still carry more or less aboriginal scrub and woodland. Only in its maritime associations is the vegetation necessarily limited, the coastal area consisting of a very restricted belt of muddy salt marsh and shingle about the Kent estuary.

In the introductory chapters a descriptive account is given of the topography and botany of the six river basins into which the county is divided for recording purposes. A sketch of the climate reveals very wide variations in rainfall from 30 in. at Temple Sowerby to 130 in. in the Langdale valley. Although purely an agricultural county the deleterious effects of smoke from Lancashire and the West Riding

on bryophytes and, more particularly, lichens, is noticeable in the southern part of the county. A further section is devoted to an analysis of the flora and comparison with those of neighbouring counties. Here the richness of the Westmorland flora is well shown. The total number of vascular plants recorded (excluding aliens, casuals and adventives) is 959, whilst the North Riding, with an area nearly three times as large, has 1005 species. The exclusion of species belonging to the class of colonists reduces the difference to no more than half a dozen. It is somewhat surprising to find that, though Germanic and Atlantic types are very weakly represented (as would be expected), yet the former outnumber the latter by 30%. (This relationship does not hold for the bryophytes.) The numerous peaks ranging from 2000-3000 ft. bring in a considerable number of alpine and sub-alpine species, which include such rarities as *Cerastium alpinum*, *Potentilla Sibbaldii*, *Saxifraga nivalis*, *Epilobium alpinum*, *Saussurea alpina*, *Myosotis alpestris*, *Bartsia alpina*, *Salix Lapponum*, *Luzula spicata*, *Carex atrata* and *Poa alpina*. Other notable species which occur in the county include *Ranunculus reptans*, *Subularia*, *Helianthemum canum*, *Linum anglicum*, *Potentilla fruticosa*, *Saxifraga Hirculus*, *Meum*, *Senecio integrifolius*, *Vaccinium uliginosum*, *Gentiana verna*, *Veronica hybrida*, *Ajuga pyramidalis* (which the present writer has twice diligently sought for on Ill Bell without success), *Allium Schoenoprasum*, *Juncus filiformis*, *Carex magellanica*, *C. ornithopoda*, *Adiantum*, *Asplenium germanicum* and *septentrionale*, *Cystopteris montana*, *Lastraea rigida* and *Woodsia ilvensis*.

The usual data as to distribution, grade of citizenship and altitudinal ranges are given but first records are not given consistently for all species. These data are omitted for many common species and for comparatively recent additions to the county list. Species occurring in North Lancashire but not recorded in Westmorland are included as bracketed entries; a useful feature, as thereby the Flora includes all the species occurring in vice-county 69. As regards the treatment of the "critical" genera, it is evident that some of these have received comparatively little attention. Especially is this the case for the Pansies and Roses, the Rose records occupying no more space than those for the Ladies Mantles. *Rubus* and *Hieracium* have received more attention with 37 and 50 species respectively. The Marsh Orchid records should have been overhauled in view of recent changes in nomenclature. All the *O. incarnata* stations refer to *O. latifolia* and surely *O. praetermissa* is not "locally plentiful" and *O. purpurella* "rare." Many of the records under *O. praetermissa* are stated to be for the variety *pulchella* Druce, but that variety has been abandoned as being little more than *O. purpurella* with unspotted leaves. One feels doubtful if the remaining records for Druce's species are trustworthy.

The nomenclature follows in the main that of the *London Catalogue* and has therefore all the imperfections of that work. *Erythraea* is used for *Centaurium*, *Cnicus* for *Cirsium* and specific names are never attributed to more than one author. It is not clear why, in a few in-

stances, such as *Umbilicus pendulinus* and *Hammarbya paludosa*, the *London Catalogue* has been departed from in the interests of correctness when many other errors of citation are retained.

These are, however, but minor criticisms of a work the value and charm of which far outweigh its defects. The book is enriched by 37 photographs of typical scenery and plants. These are nearly all the work of the author's son and their uniform excellence adds greatly to the pleasure experienced in turning over the pages of the Flora. Where all are so good it is difficult to select examples for special mention, but the illustrations of *Bartsia alpina* at Orton and *Myosotis alpestris* on Little Fell could not possibly have been bettered; and the views of the old bridge at Kirkby Lonsdale, High Cup Gill, Cauldron Snout, the Langdale Pikes and Dove Crag are but a few of the beautiful scenic illustrations. There is in addition a portrait of the author at work in his study. This we should have liked to see as a frontispiece but with an excess of modesty it is relegated to the region of the index and omitted from the list of illustrations.

The format and printing of the Flora are alike excellent and the book is provided with a separate folding coloured map of the county. We hope that this work will have the ready sale which it deserves and we congratulate the author upon the completion of a volume which is a valuable addition to the works on regional botany.

W. A. Sledge.

Wolley-Dod, Lieut.-Colonel A. H. (Editor). Flora of Sussex. Pp. lxxiii + 571 with 6 photographic plates and 2 maps. Hastings: Kenneth Saville, 1937; 15/-.

At the close of the year 1937 the *Flora of Sussex* was published and sent out to subscribers after ten years of preparation.

Sussex is a county of great natural beauty with a seaboard of nearly ninety miles facing the English Channel. This shore of shingle beach, mud-flat, chalk-cliff and sand-dune, together with a great diversity of geological formations inland, provides the substratum for a rich and varied flora. The high ground of Ashdown Forest even shelters a few plants usually associated with sub-alpine regions. This is especially so in regard to mosses and liverworts. Hitherto, among the county Floras of England, Sussex has been represented by a modest little volume by the late Rev. F. H. Arnold of Westbourne. This was published in 1887, a second edition following twenty years later, but this work could not be compared with the Floras of Hampshire, Kent, and the more recent *Flora of Surrey*. It was scarcely more than a catalogue of localities, and even so many known to Arnold were not included, as has been found by the Editor and others working on the new Flora. Critical notes on the plants, their variations, partiality for various soils and habitats, etc., were not included.

Thus it was that many botanists interested in the Sussex flora, some residents in the county or its neighbours, felt that such a county as

Sussex should have a county Flora equal to those of the surrounding counties. Moreover, as many leading British field botanists had done much work in the county, particularly the Rev. E. S. Marshall and C. E. Salmon, there was a wealth of additional knowledge awaiting collation.

In 1927 the South Eastern Union of Scientific Societies held their Annual Congress at Hastings and in his Presidential Address the late Dr A. B. Rendle suggested that the local Natural History Societies might work towards the preparation of a new Flora. The Botanical Section of the Union took the matter up forthwith and local Societies and botanists interested in Sussex plants were circularized and invited to help. In 1930, after much preliminary work had been done by Mr F. O. Whitaker, the Hon. Secretary of the Botanical Section, the Committee invited Lt.-Col. A. H. Wolley-Dod, who is resident in East Sussex, to undertake the editing of the Flora. This he has done with the co-operation and assistance of many authorities on critical genera, nomenclature and general problems. Publication was held up for nearly two years for financial reasons but these were overcome. The delay so occasioned enabled much additional work bearing on the plants of Sussex to be incorporated, though a few items have been overlooked.

The Flora runs to 571 pages in addition to an introduction of 73 pages which is not wholly the Editor's. As in many other county Floras the mosses, liverworts, lichens, fungi, etc., are not included, though it is intimated that an account of these may appear later. The topographical notes for the county generally and the botanical divisions make excellent and instructive reading. One is glad to see that the Rev. A. A. Evans has collaborated with the Editor in this subject. The list of hills over 700 ft. might have included the hill above Newbridge and Hartfield which is well over 700 ft. by King's Standing and separated from Crowborough Beacon by a deep valley.

A thorough account of the geology follows by Henry B. Milner, M.A., D.I.C., F.G.S., but after this one is very disappointed in the geological sketch-map inserted at page xxiv. Doubtless a coloured map would have been expensive but the Flora merits more than this black and white outline. It is far from easy to read and understand even by one familiar with the subject. The map (fitted in a strong cover) showing Botanical divisions which are based on river drainage as in Arnold's Flora, is also unsatisfactory. Botanists recording plants found near the boundary of a division would be better advised to rely on the 1 inch =1 mile ordnance maps in conjunction with the descriptions of the boundaries given in the introduction. This is no easy task as they do not always follow a watershed.

The chief feature of Sussex scenery is the chalk range of the South Downs, which, extending as it does from the Hampshire border to Eastbourne, crosses five of the seven botanical divisions, those of the East Rother and Medway being without a natural chalk flora. In England this flora may be said to be at its fullest in Sussex, several

plants such as *Asperula cynanchica* L., *Senecio integrifolius* (L.) Clairv. and *Phyteuma orbiculare* L. being more frequent in Sussex than in any other English county. Notable absentees from Sussex are *Anemone Pulsatilla* L. and *Astragalus danicus* Retz., but these are absent from the bordering counties also. Owing to the expansion of the towns on the coast and their tendency to join one with another we are losing many stations for interesting plants, just as Surrey and Kent are suffering from the growth of London's suburbs. The records of some of the ferns and clubmosses have in recent years become very few and intermittent in Surrey, Kent, and to a less extent in Sussex. This may be partly due to natural causes, as many northern species are dying out in southern counties.

Nearly 14 pages of "Sussex Botanologia" supply details of the work done in Sussex from the time of the Herbals down to the present day. Surely "Sir" Joseph Woods (p. xli) is an error? The number of species admitted in the Flora is 1413, but in the summary given in the comparison of the flora with adjoining counties 1412 is the number quoted. This number is not strictly accurate for it is noticed that several Salices and two Potamogeton hybrids, besides such plants as *Carex axillaris* Good. and *Polypogon lutosus* (Poiret) Hitchcock are listed as species. This upsets the balance as these plants are correctly dealt with in other floras. This summary, a feature sadly lacking in the *Flora of Surrey*, demonstrates that the surrounding counties compare very favourably with Sussex in the number of species credited to each, even when allowance is made for Surrey lacking a sea shore and thus a maritime flora. Just a few coastal species occur very sparingly on the tidal bank of the Thames in Surrey.

Two and a half pages are occupied with details of plants of special interest in the flora of Sussex. Several statements here, however, call for comment. *Ulex Gallii* Planch. is definitely known as a Surrey plant in the Hindhead district. I should not like to say that *Lathyrus maritimus* L. was ever common on the Sussex coast. *Ludwigia palustris* (L.) Ell. certainly still grows in south-west Hampshire in more than one station. Some field botanists consider that *Eryngium campestre* L. is nowhere native in Britain, while the evidence for accepting *Cirsium eriophorum* (L.) Scop. as a Sussex plant appears to be very flimsy. It is in England quite rare on chalk, usually being found on oolite and other forms of limestone. Possibly *Carduus nutans* L. or *Onopordon Acanthium* L. was really seen, or even *Silybum Marianum* Gaertn., which incidentally is stated to be native contrary to general views. It is very doubtful if *Scrophularia alata* Gilib. occurs to-day in Surrey: it is strangely rare in south-eastern England. There is an ancient record for *Orchis Simia* Lam. based on a drawing by Francis Bauer in the British Museum, but it surely never grew at Petworth which is on a sand ridge, but on the downs to the south. Sussex seems to be losing such plants as *Damasonium Alisma* Mill. and *Pulicaria vulgaris* Gaertn., the neighbouring counties sharing the misfortune. *Carex dioica* L. is

not yet extinct in Surrey or Hampshire. The *Flora of Surrey* does not say so and it was near Bisley a few years ago. Druce's record for this sedge in Rayner's Supplement to Townsend's *Flora of Hampshire* has apparently been missed, while I saw it abundantly near Liphook in 1937.

A useful feature is the list of casual aliens that have been recorded in Sussex. A considerable number of aliens which are entitled to be classed as colonists or established aliens are included amongst the numbered native species in the body of the flora. The status of many of these is not an easy task to assess but there are cases in the flora with which many field botanists familiar with the flora of south-eastern England would take exception. *Berberis vulgaris* L. is said to be sometimes native while *Chelidonium majus* L. is wholly accepted as such. The species of *Papaver* are all described as colonists while those of *Fumaria* are all classed as native. If *Diplotaxis tenuifolia* (L.) DC. be accepted as native why not *D. muralis* (L.) DC. and its variety, *caulescens* Kittel, which is certainly indigenous? Surely *Trifolium resupinatum* L. (numbered) and *T. agrarium* L. (unnumbered) are of equal status. *Inula Helenium* L. is rather surprisingly given native status although *Campanula latifolia* L. is dismissed as an alien. The latter's occurrence as a native in southern England should be investigated as many of the records for it are old. The treatment of *Asparagus* seems confused as surely *A. maritimus* Mill. (the Cornish plant) does not occur in Hampshire or eastwards. *Ornithogalum pyrenaicum* L., though long known at Fishbourne (200 years) deserves a ? before "native" in view of the nature of the locality. It is generally considered that *Bromus interruptus* Druce is rather spasmodic in its appearance, at least it is so in Surrey, so it is to be doubted if it is any more permanent in Sussex. *Elymus arenarius* L. at West Wittering may have come from Hayling Island where it is native rather than westwards round Selsey Bill from Pagham.

The Plan of the Flora gives an explanation of how the species are dealt with and of the arrangement of localities, the procedure being no different from other county floras. Here and there a single station for a plant has been credited to each of two adjacent divisions, chiefly because recorders are not always explicit in describing localities. The Editor might have weeded out some of this duplication but it is a difficult task, especially so in the region about the mouth of the River Arun. There are no new species, varieties or forms described in the Flora, but many species are now first recorded for one or other of the two botanical vice-counties into which Sussex is divided. The new Flora will be an aid in correcting and bringing up-to-date "Topographical Botany" and Druce's "Comital Flora."

Many readers will turn to the various critical genera to see how they have been treated. The Editor has had, and acknowledges, expert help with many of them from our leading specialists but inevitably there are a few points one can comment on. In *Viola* I have had my notice drawn to the placing of *subcarnea* Parl. as a form and *dumetorum* R. & F. as

a variety of *V. odorata* L. though both are colour forms of equal significance. *V. calcarea* Greg. is maintained as a separate species though said to be now regarded as doubtfully distinct from *R.* (*sic*) *Foudrasi* Jord. Here occurs one of the few typographical errors found in the Flora. *Sagina Reuteri* Lange is surely very doubtful as a Sussex plant. The *Rubus* list appears to contain many records, some of which are errors, or unconfirmed identifications—just, one might say, a collection of records, right and wrong. The *Hieracium* list does not seem to be so long as one would expect, due no doubt to the reasons expressed in the paragraph preceding the account of the genus. The interesting notes on *Gentiana baltica* and *G. campestris* should have been followed by the adoption of the name *G. anglica* Pugsl. for *G. lingulata* Ag., var. *praecox* Towns. The account of *Mentha* would appear to show Sussex as a county rich in mints, but it has been the experience of several friends and myself that mints are much scarcer generally in Sussex than in Surrey or Hampshire.

Sussex has always been known as a county where the Orchidaceae are well represented. It is to be hoped that the plants will be left alone in their habitats now that information about some of them becomes common knowledge. One does not want the Flora to stimulate interest in orchids and other showy but scarce plants to the extent of an orgy of "collecting" which generally serves no other purpose than to exterminate the plants, when indulged in by uninformed people. The Hampshire record of *Cephalanthera rubra* L. was an error and maybe the Kentish one was too. Surely *C. longifolia* (Huds.) Fritsch never occurred in such a station as Chiltington Bog, quite unsuitable an habitat for this lover of beech woods. *Epipactis leptochila* Godfery has been recorded by P. M. Hall from both north and south Hampshire. *Orchis O'Kellyi* Druce is made a variety of *O. elodes* Gris. incorrectly and evidently inadvertently as there is no mention of "comb. nov." On page 430 *O. incarnata* L. is retained without any reference to Pugsley's interpretation of *O. latifolia* L., although reference is made to *O. pardalina* Pugsl. Also under *O. incarnata* L. appears the hybrid *latifolia* × *praetermissa* showing that it was intended to change *O. incarnata* L. to *O. latifolia* L. but overlooked. This will confuse some people not *au fait* with recent research in this genus. Mr Lousley tells me that *Gymnadenia albida* (L.) Rich. was not *seen* in 1932 in St Leonard's Forest, but that was when the record was sent in. It is a pleasure to see a full account of the Carices, so poorly dealt with in the *Flora of Surrey*. In comparison with its occurrence in Surrey *C. pulicaris* L. seems to be frequent in Sussex. I wonder how many of its stations (none listed!) would produce it to-day? Many stations are given for *C. Leersii* F. Schultz placed as a variety of *C. contigua* Hoppe, which makes one wonder why it is so rarely seen in Surrey. The references to *C. tomentosa* L. should stimulate search for it; the Arun or Adur valleys are likely. It is a pleasure to see that many records made by C. E. Salmon are a feature of the *Carex* list.

At the end of the Flora where they are apt to be overlooked there are six excellent photographs of characteristic Sussex plants, but nowhere in the book can I find mention that they are by E. J. Bedford of Lewes, well known for his flower portraiture.

There are but few misprints in the Flora, mostly recorders' initials wrongly given, e.g., E.W. for E.W.S., E.C.M. for E.C.W., etc. One or two place names suffer, such as Nepp for Knepp. Under *Rumex maritimus* L. Patching Pond is placed correctly in division II, but in division I under the next species. *Sparganium neglectum* Beeby (p. 454) is said to be recorded from all divisions save I, but a list of localities in that division immediately follows. On page 496 *Leersia* is said to be known in North Hants, but this should read South Hants. What is the *west* coast of Kent mentioned on page 516?

The book is well and clearly printed and bound in a strong but plain cover, which opens flat to one's satisfaction. If attention has been drawn above to a number of errors, these are but minor blemishes and merely serve to emphasize the general high standard of the Flora. Much praise and gratitude are due to the Editor for the time and energy he has expended upon the Flora from all those who love Sussex by the sea. The Flora can proudly take its rightful place on our bookshelves in company with those of the counties that march with Sussex.

E. C. Wallace.

ABSTRACTS FROM LITERATURE.

Compiled by the Hon. Editor with the collaboration of the following helpers:—Miss M. S. Campbell, R. A. Blakelock, Dr E. G. S. Brown, A. A. Bullock, J. S. L. Gilmour, A. K. Jackson, Dr R. Melville, and A. J. Wilmott.

GENERAL.

(A) MORPHOLOGY.

The Angiospermous Flower.—Appl (1937) gives the Ranunculaceae an Ophioglossales ancestry, the flower arising by shortening of the flower axis similar to the origin of the Euphorbiaceous flower by shortening and reduction of the Gnetum flower. Rosales are considered of independent fern origin, and Myrtales of Bennettitinean origin. The Helobiae are considered to have no phylogenetic connection with the Ranunculaceae.

Schaffner (1937) treats the angiospermous flower as being strictly the same system as the strobilus of horsetails, clubmosses, cycads and conifers. The evolution of unisexual flowers is regarded merely as an expression of sex-determination in space and time in the development of the shoot. Nine fundamental morphological flower types are postulated, and these are diagrammatically illustrated from actual plants.

Embryo Sacs.—Several British genera are mentioned in a study by Maheshwari (1937) of the various types of angiosperm embryo sacs, which are classified (good diagrams).

Causes of Monstrous Flowers.—Floral abnormalities caused by the attack of mites of the genus *Eriophyes* on *Geranium sanguineum* L., *Cardamine hirsuta* L. and *Polygala serpyllacea* Weihe are described in detail by Moyse (1937).

(B) ANATOMY.

Water-Supply of the Plant.—A few British species are mentioned by Salisbury (1937) in his discussion of the water-supply of a plant.

(C) CYTOLOGY.

It is shown by Sax and Sax (1937) that stomata frequency can be used as an index of polyploidy, the number per unit area being reduced in a tetraploid as compared with a diploid, by a fraction of the order of 50%. The evidence adduced is not claimed as conclusive.

(D) BIOLOGY.

Parasitism.—While preparing sections to show penetration of the haustoria of Dodder (*Cuscuta trifolii* Bab.) into the stem of clover, Ellis (1937) observed that, where stems of the Dodder overlapped, the haustoria commonly penetrated the stem of the Dodder itself without passing into the stem of the clover. A similar phenomenon has been observed in *Lathraea Squamaria* L.

Pseudocopulation in the Orchidaceae.—The term " pseudocopulation " is used by Ames (1937) to describe the method of pollination which has been observed in some species of Orchids to the flowers of which the males of certain species of insects are sexually attracted. This paper gives a useful résumé of the well-known observations of Pouyanne and Godfery on *Ophrys* and those of Mrs Edith Coleman on the Australian genus *Cryptostylis*. The author, basing his argument upon the supposition that *Ophrys* and *Cryptostylis* are very primitive genera, develops the theory that pseudocopulation is also a primitive character. Apart from other considerations his argument would appear to be entirely vitiated by the wording of the following sentence (the italics are mine—P.M.H.):—" Allowing for differences of opinion, and in this case they are *delightfully negligible*, the positions assigned to Ophrys and Cryptostylis indicate that pseudocopulation, *no matter what future studies and discoveries may reveal with regard to its presence*, is a peculiarity of the lowest groups of the Orchid family, and therefore may be considered an ancient and long established association." The absence of fossil Orchidaceae, which might have produced evidence in support of this theory, is lamented. The author also refers to the discovery of " moral turpitude among the insects " !

The extreme specialization, which is a feature of these associations, might rather be regarded as an indication of a high position in the evolutionary scale. Such an assumption is in accordance with the theory developed by Godfery in his " Monograph of British Orchidaceae," that in the Basitonae at least evolution takes the form of the improvement and increased specialization of the rostellum. *Ophrys* with two separate bursicules protecting the viscidia is a mostly highly specialized genus. Ames' theory is based on the assumption that *Ophrys* is the most primitive genus of the Basitonae, because several authors place it first in their taxonomic arrangement. I have to thank Mr V. S. Summerhayes for the pertinent observation that the presence of the two bursicules is a character which " keys out " well and so leads many authors to place it first in their arrangements.—P. M. Hall.

Size of Plants.—The size of plants is determined by three factors: the initial size of the primordium (" capital "), the frequency of cell-division (" rate of interest "), and the period over which the rate of interest is maintained, i.e. up to the onset of senescence. Each of these three factors is in turn governed by heredity and environment. Heredity controls size chiefly through determining the initial size of the primordium, while environment affects size by increasing or decreasing the rate of growth.—Ashby (1937).

(E) ECOLOGY.

Transplant Experiments.—Fourth report on these experiments. See Marsden-Jones and Turrill (1937 B).

Grassland: *Meadows.*—In a comparative study of alluvial meadows bordering the Thames near Oxford, Baker (1937) contrasts floristically a grazed meadow with others consistently cut for hay.

Hill Grazings.—Fenton (1937) discusses the results of experimental work on the influence of sheep on the vegetation of hill grazings in Scotland.

Heath.—The results of proximate chemical analyses of a heather-peat profile are given by Waksman (1937).

Ruderal Plants.—Bates (1937) discusses the factors affecting the distribution and arrangement of wayside and hedgerow species. The biotic factor is largely responsible for a definite wayside and hedgerow type of vegetation arranged mainly in zones.

Dead-nettle and Stinging-nettle Association.—Further observations into the alleged stimulation of *Lamium album* L. by the presence of *Urtica dioica* L. are described by Poulton (1937).

Breckland.—The second of a series of papers on the ecology of Breckland deals with the influence of the vegetation on the origin and development of blow-outs.—Watt (1937).

(F) NOMENCLATURE.

Linnaean Synonymy.—Careful study by Savage (1937 A) of a copy of the 14th edition of the "Systema Vegetabilium" (1784) in Linnaeus' library has shown that the annotations therein represent Sir J. E. Smith's record of the Linnaean herbarium as it came into his hands from Sweden. As a result of this investigation it is possible to recover the critical opinion of Banks, Dryander, and Smith upon the Linnaean plants, and light is also thrown on the disposition of the herbarium of the younger Linnaeus. His plants are now in three different herbaria. Some of his own type-specimens are in the Linnaean herbarium: others of his plants are in Smith's herbarium. Linnaeus' second collection (the "*herbarium parvum*"), now preserved at Stockholm, contains 83 specimens (listed by Savage) from the Linnaean herbarium, given by Smith to Banks, who sent them to the younger Linnaeus. Smith's enumeration of the Linnaean herbarium also shows that it has been so well cared for that no type-specimens are missing.

Asterisks in Linnaeus' "Species Plantarum."—Certain citations in the "Species Plantarum" are marked by an asterisk. The explanation of this is that where Linnaeus found it necessary to give a description (as distinguished from a diagnosis or mere list of synonyms) in his earlier works (such as "Flora Zeylanica," "Hortus Cliffortianus" and "Hortus Upsaliensis"), he usually indicated this by marking the citation in "Species Plantarum" with an asterisk. Citations of descriptions by Guettard, Gronovius, C. Bauhin, and Tournefort are similarly marked.—Sprague and Exell (1937).

Willdenow's "Hortus Berolinensis."—This 2-volume folio work was published at Berlin in fascicles between 1803 and 1816. There has been much uncertainty with regard to the contents and dates of publication of the fascicles. It has now been possible to remove this uncertainty and the contents and dates of the fascicles, as well as the authorities for the decisions taken, are tabulated by Stearn (1937).

(G) MISCELLANEOUS.

Methods of preserving plant material in natural colour are discussed by Scully (1937). Formulae are given which the author has used with fair success.

(H) PHYTOGEOGRAPHY.

History of European Flora: *Cultivation by Early Man.*—In Mecklenburg certain species seem to be connected with the ancient earthworks and settlements of the Wends, and Bauch (1937) considers that it should be inferred that they were then sown in garden fashion, and should be regarded as relicts of former cultivation. The species discussed are too numerous to be mentioned here, most being ornamental or medicinal.

Geographical Elements in British Flora.—Matthews (1937) emphasizes the more important geographical connections existing between the flora of the British Isles and that of the Continent. About 640 British species are classified according to their main areas of distribution on the Continent. The species are tabulated under 11 different elements and the distribution of the individual species both within and outside the British Isles is given.

"Atlantic" Plants.—An account of the occurrence of "Atlantic" species at Spessart (Lower Franconia) is given by Ade (1937). The list includes *Digitalis purpurea*, *Sarothamnus scoparius*, and several other of our common species, and others more local with us, such as *Microcala filiformis*, *Corrigiola littoralis*, and others. The topography of the area leaves it affected by winds of Atlantic origin, producing a good rainfall and often almost snow-free winters.

Many British species are dealt with by Jones (1937) in his ecological study of the vegetation of Grimsey, Iceland.

A list of plants, with localities, from N. Manitoba, Hudson Bay and Labrador (Gardner, 1937) includes many common to the British flora and a few adventives from Europe.

Adventives: *Garden Weeds.*—The sources of origin and persistence of "weeds" in a garden are discussed by Hull (1937 B).

Ballast-heaps.—A list of plants growing on the N. bank of the Tyne thought to have been introduced by the deposit of sand-ballast from foreign sailing-ships is given by Temperley (1937 B).

Pit-heaps.—A list of the plants colonising a pit-heap is given by Heslop Harrison (1937 C).

Aliens in the New Zealand Flora.—A number of British species are among those, whose provenance, method of entry into New Zealand, and dispersal are discussed by Allan (1937). Species introduced at approximately the same time vary very considerably in their rate of spread.

(I) TOPOGRAPHICAL.

British Isles: General.—*Local Floras.*—Redgrove (1937) deprecates the omission of precise information regarding the localities of rare or local plants and makes some additions to the list of Local Floras compiled by Druce in *B.E.C. 1932 Rep.* (1933).

Colloquial Plant-names: *Cumberland.*—An interesting list of about 150 names is given by Murray (1937). *Northumberland.*—Hull (1937 A) gives a list of Northumbrian names, " recollections of the seventies and eighties of last century." *America.*—Several British plants are included in a short list of colloquial American names by Hastings (1937).

N. Somerset and W. Gloster: Bristol District.—Extensions of range and additions to the flora of the Bristol district during the years 1932-36 are recorded by Sandwith (1936 and 1937). Many of the more interesting have already been recorded in past Reports of this Society, and several of the 1936 Records are included in " Plant Records " above.

Wiltshire.—Occurrences of noteworthy plants in North and South Wilts during the years 1933-37 are listed by Grose (1937) and Gullick (1937) respectively. Several of these have already been noted in this Society's reports; others will be found in " Plant Records " above.

Dorsetshire.—The objects of a Botanical Survey of the county of Dorset and the methods employed are described by Good (1937). The primary aim of the survey is the production of a large number of species-maps. Each map will show the distribution of a single species within the same area. Comparison of these maps will provide material for a full account of the present vegetation of the county and for a complete study in the plant ecology, in addition to furnishing evidence as to factors controlling the range of distribution of species.

Sussex.—*The Flora of Sussex* (W.-Dod; 1937) is reviewed elsewhere in this Report. Many corrections to *C.F.* are necessitated, which are dealt with in " Plant Records " above.

Yorkshire: *Craven in Wharfedale.*—The account by the late F. A. Lees of the vegetation of this district " with its adjacencies in Aire and Ribble " is being published posthumously in the *North Western Naturalist* as a Supplement (Lees, 1937). After the publication of his *Flora of West Yorkshire* in 1888, Lees worked assiduously at a Supplement which was intended at the same time to embrace the flora of the whole county. This was completed at the end of 1911 but, failing to receive the backing of the Yorkshire Naturalists' Union, Lees used his Supplement as the basis for a Flora of Craven, which was completed between July 1913 and December 1916. On Lees' death in 1921 the MS. was deposited in the Leeds Reference Library but by permission of his widow has now been transcribed for publication in the *N.W. Naturalist* by the Editor, Mr A. A. Dallman. The three instalments (pp. 1-40) published in 1937 cover Ranunculaceae to Compositae (*Carlina*).

Northumberland and Durham.—The topography of Baker and Tate's *New Flora of Northumberland and Durham* (1868) has been carefully checked by Temperley (1937 A). Although Baker and Tate stated that their groups of drainage districts corresponded with Watson's vice-counties, this was not absolutely correct in the case of the two vice-counties of Northumberland. In a few cases the necessary corrections affect vice-comital records: these are referred to in " Plant Records " above. There are in addition several corrections of typographical errors.

SUTHERLANDSHIRE: *Island of Handa.*—A list of the flowering plants and pteridophytes of this small uninhabited island is given by J. W. and H. Heslop Harrison (1937). The list includes several plants of interest, of which three are new to v.-c. 108 and are referred to in "Plant Records" above.

CHANNEL ISLANDS: ALDERNEY.—A list of plants of interest noted during two visits in 1933 and 1934 by Jackson, Jackson, and Airy-Shaw (1937) includes a number of new records for the Island; these have been included in "Plant Records" above.

SYSTEMATIC.

6. RANUNCULUS L. The chromoplasts of several species are described by Beauverie (1937).

6/33. RANUNCULUS FICARIA L. The origin of the tubercles in the axils of the foliage leaves as well as the subterranean tubers has been studied by Metcalfe (1938). Both categories of tuber consist when mature of swollen, starch-containing roots, bearing one or more buds. Additional buds arise adventitiously from this root tissue and the manner in which large complex masses of subterranean tubers or compound aerial tubercles are formed is described in detail. Marsden-Jones' previous description of forms of *R. Ficaria* with aerial tubercles as a genetically distinct variety under the name *bulbifera* is also discussed.

Cross-pollination by insects is indispensable for the full production of viable seed. In the absence of insect visitors selfing takes place, which results either in complete sterility or the production of only a small proportion of viable seed. Marsden-Jones (1937) describes the results of thirty-five observations, covering twenty-six and a quarter hours, between March 15th and May 29th, 1931. Forty-eight species of insects (Coleoptera, Hymenoptera, Lepidoptera, and Diptera) were observed visiting. Weather conditions play an important part.

16/1. PAEONIA MASCULA Mill. The colour of the Steep Holm Peony is a bluish purple, very distinct from the rich red of garden peonies and from the colour of *P. corallina* Retz., as figured in *E.B.*, 1513, ed. 3, pl. 1. It appears that the colour in the plate was altered on account of a remark of J. E. Smith's. Further a stamen drawn enlarged in the plate shows the filament much longer than the anther and the same feature appears in specimens distributed from Steep Holm.—Little (1937).

22/1. MECONOPSIS CAMBRICA (L.) Vig. Chromosomes n=14.—Sugiura (1937).

24/1. ROEMERIA VIOLACEA Med. Chromosomes n=6.—Sugiura (1937).

25/1. CHELIDONIUM MAJUS L. The strophiole of the seeds is of superficial origin and may be likened to a compound hair.—Crété (1937).

The development of the embryo is described by Souèges (1937), who does not confirm Hegelmaier's observations which suggested relationship with Ranunculaceae and Cruciferae: the development is very similar to that in *Papaver Rhoeas* L.

32/10. FUMARIA OFFICINALIS L. Chromosomes (Schleswig-Holstein: Kiel-Wyk) confirmed as n=14 by Wulff (1937: 263).

6. CRUCIFERAE B. Juss. The germination in the tribe *Brassiceae* is described (with figures) by Vassilczenko (1937 B), and its phylogenetic importance discussed. [Russian only.]

37. ARABIS L. The plant which has previously passed in N. America as *A. hirsuta* (L.) Scop. is described as a distinct species, *A. pycnocarpa*, by Hopkins (1937), who gives an account of the N. American species.

49/6. SISYMBRIUM OFFICINALE (L.) Scop. Chromosomes (Schleswig-Holstein: Altona-Süllldorf) n=7.—Wulff (1937: 263).

60/1. CORONOPUS DIDYMUS (L.) Sm. Harper (1937) comments on the external resemblance of this plant to the American Composite, *Gymnostylis*, with which it sometimes grows.

80/4. RAPHANUS SATIVUS L. Hybrids with the Abyssinian mustard (*Brassica carinata*) and their F_2 progeny (all raised in England) have again been studied cytologically by Richharia (1937): in both F_1 and F_2 generations they are said to be "extremely sterile."

85/2. RESEDA LUTEA L. Chromosomes 2n=48.—Eigsti (1936).

88/33. VIOLA LUTEA Huds. Chromosomes (Lindau Alpengarten) n=19-20 (but the v. *elegans*, sub-v. *multicaulis*, from Westphalia had n=26).—Griesinger (1937).

90/2. FRANKENIA PULVERULENTA L. Chromosomes n=10.—Sugiura (1937).

96. SILENE L. SILENE MARITIMA and S. VULGARIS. (1) A mountain plant was received from Wales, which, while agreeing in most characters with *S. maritima*, possessed aberrant characters suggesting either previous contamination with *S. vulgaris* or representing more ancient phenotypic combinations than are now found in coastal *S. maritima*. This plant was selfed and crossed with typical *S. maritima* and *S. vulgaris*. Analyses of various characters and organs and their genetical behaviour are given. (2) Two stocks of *S. vulgaris* from Bulgaria were investigated. The two Bulgarian plants showed little segregation on selfing. On crossing one of them with *S. maritima* from Dorset partial sterility was shown in F_1 and F_2. Considerable segregation occurred in F_2. A predominating influence of the ovule parent was shown for stem length. The results suggest that three or more gene pairs were involved in leaf shape. Segregation occurred for other characters. The plants bred true for armadillo seeds even in the interspecific cross and its offspring. It was further suggested that there are three factor pairs, two dominants of which are essen-

tial, for the production of anthocyanin colour. (3) A wild population of *S. vulgaris* from Somerset was studied in the field and genetically, showing that *S. vulgaris* on a sea cliff can remain as true to its recognized specific characters as an inland population if no *S. maritima* is present. When *S. vulgaris* and *S. maritima* occur together intermediate plants, which show complicated segregations, may be found. (4) The results are given of crossing an Austrian plant with British *S. vulgaris* and *S. maritima*. The Austrian plant was a representative of the high mountain Central European plants which are classifiable as *S. vulgaris* in some characters and recall *S. maritima* in others. Considerable sterility was shown in some crosses and selfings, especially with *S. vulgaris*. On the whole there was no greater complexity of segregation than with British material alone. Even coloured petals appear in some wild British *S. vulgaris*. Most characters behaved genetically as was expected from previous investigations.—Marsden-Jones and Turrill (1937).

96/1. Silene maritima With. Chromosomes (S. Sweden) n=12.—Griesinger (1937).

96/2. Silene Cucubalus With. ["*S. inflata* Sm."] Chromosomes (S. Tirol: and of subsp. *alpina* (Thomas) also) n=12.—Griesinger (1937).

96/9. Silene Otites (L.) Wib. Chromosomes (Tirol: 3 localities) n=12.—Griesinger (1937).

97/4. Lychnis dioica L. Pistillate plants are higher in dry weight, in the rosette and flowering stages, and are higher in pH, fresh weight and oxydase activity in the flowering stage only. Staminate plants are higher in ash, phosphorus, nitrogen and total sugars in rosette and flowering stages. A table of results by other workers on a number of different dioecious plants, and a useful bibliography of work on sex-differentiation are given.—Stanfield (1937).

97(2). Viscaria. Chromosomes of both *V. alpina* (L.) Don and *V. vulgaris* Roehl (Garden) n=12.—Griesinger (1937).

102/5. Arenaria serpyllifolia L. Chromosomes (Tirol: many gatherings) n= 20: in one gathering and its offspring n=10 (as in the var. *Marschlinsii* Koch, two plants and their offspring).—Griesinger (1937).

103/1. Sagina nodosa (L.) Fenzl. Chromosomes (Schleswig-Holstein: Sylt) 2n=20-24.—Wulff (1937: 262).

103/11. Sagina procumbens L. Chromosomes (Schleswig-Holstein) 2n=22.—Wulff (1937: 262).

112/14. Hypericum perforatum L. This species is a serious pest ("Klamath weed") in parts of northern California. It is found that tap water retards germination in comparison with distilled water, the retardation being due to the contained calcium (and not to alkalinity in general), which may alter the permeability of the seed coat to water.—Borthwick (1936).

18. Malvaceae Adans. The arrangement and structure of the extrafloral nectaries is discussed by Janda (1937): *Lavatera arborea*, *Althaea officinalis*, *Malva sylvestris* and *M. rotundifolia* are listed as " K " (with small glandular heads or *Keulen*-hairs) and " St " (with stellate hairs and other covering hairs).

132/1. Oxalis Acetosella L. The occurrence of this species as an epiphyte in the Llangwm district of Denbighshire is recorded by Dallman (1937 B). A number of plants were growing at about 4 feet above the ground in a dense mass of the moss *Eurhynchium myosuroides* Schp. The conditions of the locality were very humid and shady.

132/3. Oxalis stricta L. Chromosomes (Schleswig-Holstein: Kiel) n= 12.—Wulff (1937: 262), who notes that for *Oxalis corniculata* L. the number is only given as 11-12.

137/1. Evonymus europaeus L. Chromosomes (Schleswig-Holstein): " tetraploid (n=32)."—Wulff (1937: 264).

138/1. Rhamnus Frangula L. Chromosomes (Schleswig-Holstein) n= 13.—Wulff (1937: 264, as *Frangula alnus* Mill.).

154/2. Melilotus alba L. The vascular anatomy of the seedling is described by McMurry & Fisk (1936) as similar in method of transition to that described in *M. arvensis*, *Medicago*, *Trigonella*, *Ononis* and *Trifolium*.

189/25. Comarum palustre L. Chromosomes (Schleswig-Holstein) 2n= 14.—Wulff (1937: 263).

194. Rosa L. First results of " crossing experiments " between sexual and apomictic roses are described by Gustafsson (1937 A, English summary): all offspring resembled the mother parent, i.e., no crossing occurred. Two aberrant plants are regarded as mutations.

194/23. Rosa spinosissima L. A plant of this species, transferred to a garden in 1918, flowered freely for several years but produced no fruits. Later another set of plants of the same species from a different locality was planted nearby with the result that both series fruit freely. This confirms the view that sexual roses are self-sterile.—Heslop Harrison (1937 A).

211/6. Sedum acre L. Chromosomes (Schleswig-Holstein: Kiel) n= 24.—Wulff (1937: 263), who notes that Toyohuku (1936: *Japan. Journ. Genetics*, *11*, 316-317) found n=8 on material from England.

213/1. Drosera anglica Huds. The capture of a Dragon-fly, *Agrion minium*, and a Northern Brown Butterfly is recorded by Heslop Harrison (1937 B).

213/3. Drosera rotundifolia L. The capture of a Dragon-fly, *Agrion minium*, and a Large Heath Butterfly is recorded by Hull (1937 C).

The insect catch of this species on a moor in Germany (Grenzmark) has been analysed in detail by Münchberg (1937). The ecological (habitat) relations of the various species are given.

[I would put on record my observation (in 1913) of a Small White (or Green-veined White: I did not note which) Butterfly held fast on this species in Surrey (Oxshott Black Pond)—A.J.W.]

Vegetative propagation from leaves is described by Moulaert (1937). Regeneration takes place by the formation of a bud at the base of a tentacle on the upper side of the leaf, the ordinary epidermal cells becoming meristematic. Adventitious roots may be formed from this same meristem, or may develop from a meristem of ordinary parenchyma cells in the leaf at the base of the new bud and traverse the thickness of the leaf to emerge on the lower surface.

223. Oenothera L. A full account of the forms of this genus naturalised in N. Germany is given by Renner (1937). A synopsis of the species and varieties is added (p. 219) and the various hybrids are named.

285/2. Cornus suecica L. The distribution of this species in the Hole of Horcum, Saltersgate, N.E. Yorks, has been the subject of detailed investigation by Flintoff and Britten (1937). In this locality it is stated that the species flourishes best in association with *Pteris*, the flowering period (third week in May to first week in July) preceding the maximum development of *Pteris*. It is considered that the *Cornus* is of comparatively recent origin in this locality, being spread by birds (especially Ring Ousels) feeding on the drupes. An excellent photograph of this species in flower accompanies this paper.

The pollination of this species has been studied by Dallman (1937 D), who publishes a list of 12 species of Coleoptera, Diptera and Hymenoptera observed visiting it. There is no record of previous British observations on this species.

306/1. Dipsacus sylvestris L. This was recorded as an adventive by K. Brandegee in *Zoe*, *2*, 383 (1892) as a naturalized plant of San Francisco, growing "behind and above Presidio proper." The plant still flourishes at this place, whence it has not spread, but another locality is given and it is suggested that the plant may have been confused with *D. fullonum* L. and is perhaps more common than has been realized.—Howell (1937 B).

324/3. Filago germanica (L.) Huds. Chromosomes (Bot. Gard., Kiel) 2n=28.—Wulff (1937: 265).

328/1. Gnaphalium luteo-album L. This adventive in Great Britain is becoming an aggressive weed in California, where it has been undetected hitherto, owing to its resemblance to a slender form of *G. chilense* Spreng.—Howell (1937 A).

334/2. Pulicaria vulgaris Gaertn. Chromosomes (Bot. Gard., Kiel) 2n=18.—Wulff (1937: 265), although *P. dysenterica* has n=10.

368. Anthemis L. Chromosomes of both *A. arvensis* L. and *A. Cotula* L. (Bot. Gard., Kiel) are 2n=18.—Wulff (1937: 265).

371/2. Matricaria Chamomilla L. This species is mentioned by Turrill (1937) among those used in the Balkan Peninsula in place of tea. The " tea " is probably most often made for medicinal purposes but the infusion is scarcely bitter and is very pleasing to drink.

371/3. Matricaria discoidea DC. Chromosomes (Schleswig-Holstein) n=9.—Wulff (1937 : 265).

372/3. Cotula coronopifolia L. Chromosomes 2n=20.—Wulff (1937 : 265).

383/5. Senecio Jacobaea L. Green (1937) observes that the fruits of the ray florets with deciduous pappus are retained within the involucral cup, after the dispersal of the fruits with pappus. It is suggested that the ray fruits are responsible for the colonization of suitable ground in the immediate vicinity of the plant.

393/3. Arctium minus (Hill) Bernh. Chromosomes (Bot. Gard., Kiel) 2n=32.—Wulff (1937 : 265).

396. Cirsium Mill. Chromosomes of *C. acaule* (L.) Weber and *C. heterophyllum* (L.) Hill (Schleswig-Holstein) have both 2n=34.—Wulff (1937 : 265).

405/1. Centaurea Jacea L. Chromosomes (Bot. Gard., Kiel) 2n=44.—Wulff (1937 : 266).

415/1. Picris echioides L. A list of six species of Diptera captured when visiting this species is given by Dallman (1937 C). There are no previous records of British observations on the pollination of this species and the only visitor previously noticed (by Sprengel) is the Honey Bee.

416/5. Crepis capillaris (L.) Wallr. Chromosomes : " there is no evidence of somatic pairing in metaphasic figures "—Matsuura (1937 : 218). Two marked dividing periods and two resting periods during a day's growth were observed by H. Ono (1937).

422/3. Thrincia hirta Roth. Chromosomes (Bot. Gard., Kiel) 2n=10, one pair with conspicuous trabants.—Wulff (1937 : 266).

423. Taraxacum Zinn. The occurrence of a sexual population within the apomictic *Taraxacum vulgare* group is described by Gustafsson (1937 B).

427/1. Sonchus palustER L. Chromosomes (Bot. Gard., Kiel) 2n=18. —Wulff (1937 : 267).

427/2. Sonchus arvensis L. Chromosomes (Schleswig-Holstein : dunes at Amrum) n=32.—Wulff (1937 : 267).

435/1. Campanula glomerata L. Chromosomes (Tirol) n=15.—Griesinger (1937).

435/7. Campanula Rapunculus L. Chromosomes : n=51.—Sugiura (1937 : 425).

445/1. Calluna vulgaris (L.) Hull. Germination is found to occur in sterilised earth, but the growth is rapidly arrested and the shoot reddens : this is considered to be due to the changed physical (possibly also chemical) state of the soil which becomes compact,

and not due to absence of mycorrhiza. In sterile culture solution normal growth for twenty-two months has been obtained without any sign of mycorrhiza.—Molliard (1937).

458/2. Armeria maritima Willd. Chromosomes (garden: 2 sources) n=9, as in *A.* "*arctica*, *A. alpina*, etc."—Griesinger (1937).

459/1. Hottonia palustris L. The epidermis of both subaerial and submerged forms is described by Lavier-George (1937): the species can live as well out of water as submerged.

465/1. Trientalis europaea L. Chromosomes (Schleswig-Holstein) n= circa 80: Wulff (1937: 264), who notes that this extraordinarily high number may have significance, since the plant has a northern distribution and develops very slowly, producing fruit only several years after germination, in spite of its small size.

467/2. Anagallis arvensis L. Chromosomes (Schleswig-Holstein) n= 20.—Wulff (1937: 264).

471/1. Fraxinus excelsior L. The occurrence in Germany of white or variegated seedlings is described by Funk (1937). The cotyledons are usually green (very rarely white speckled or striped) and subsequent leaf pairs vary to complete lack of chlorophyll, or there may be transitions in later pairs to green leaves. They originate only from certain individual (? heterozygous) trees.

486/1. Polemonium coeruleum L. Chromosomes (Bot. Gard., Hamburg and Berlin) n=9, as also in the var. *himalayanum* Bak., and in the arctic *P. humile*.—Griesinger (1937).

506/6. Myosotis alpestris Schmidt. Chromosomes (Tirol: 3 localities) n=12.—Griesinger (1937).

506/7. Myosotis sylvatica (Ehrh.) Hoffm. Chromosomes (Tirol: two plants, as "subsp. *silvatica* Ehrh.") n=9 in one, 16 in the other. —Griesinger (1937).

511/4. Calystegia Soldanella Br. Seeds moistened with a solution containing a small quantity of salt were found to germinate equally well as with tap water, but showed a marked falling off with a larger amount of salt: the growth of the seedlings also diminished with increase in salt and stopped altogether when 3/4 and 1/1 artificial sea water were used.—Tsuda (1937).

517/2. Solanum nigrum L. Two forms occur in Formosa, one with chromosomes 2n=12, another with larger reproductive organs, thicker leaves and chromosomes n=36 (autohexaploid ?): the pollen of the latter is large: triploid and dodecaploid forms are mentioned.—Nakamura (1935: ex *Jap. J.B.*, *9*, Abstracts, p. 16).

524/1. Hyoscyamus niger L. Chromosomes (Budapest Drug station) n=17. (*H. albus* has n=34).—Griesinger (1937).

543/8. Veronica Anagallis-aquatica L. The effect of aerial and aquatic environments on the form, flowering and anatomy, and of transference from each environment to the other on flowering, are studied by Gertrude (1937). The different forms obtained are illustrated by photographs.

543/19. VERONICA AGRESTIS L. Chromosomes (Schleswig-Holstein) n=14.—Wulff (1937: 265).

543/41. VERONICA FILIFORMIS Sm. has been confused with *V. Tournefortii* Gmel. Even Smith himself confused the two plants in his herbarium. It differs from *V. Tournefortii* in the more slender stems, the leaves only 5-10 mm. broad, the sub-orbicular capsule with its long style and seeds 1/3 the size. The plant is a native of the Near East but has occurred adventive in several stations in France and has been reported previously by A. Chevalier from the Channel Islands.—Touton and Courcelle (1937).

569/1. NEPETA CATARIA L. The development of the female gametophyte is described and figured (figs. 17-22) by Bushnell (1936 A). Chromosomes n=16.—Bushnell (1936 B).

581/3. LAMIUM PURPUREUM L. Chromosomes (Munich Bot. Gard.) n=9.—Griesinger (1937).

588/5. PLANTAGO MARITIMA L. Chromosomes (Schleswig-Holstein) n=6 (whereas *P. alpina* L. has n=12).—Griesinger (1937).

588/8. PLANTAGO LANCEOLATA L. Illustrations of teratological forms and tables of experimental cultivations are given by Flintoff (1937). The monstrosities took the form of branched and umbelliferous inflorescences, fasciation, stem branching, and the appearance of foliaceous bracts. The conclusion is reached that these phenomena were not the result of the action of insects or fungi, or of the nutritional stimulation of rich soil, but probably represent atavisms.

594/1. CORRIGIOLA LITTORALIS L. Chromosomes n=8.—Sugiura (1937).

611/4. SALICORNIA HERBACEA L. The seed (with figure) and germination is described by Vassilczenko (1937 A).

626/1. VISCUM ALBUM L. The water-relations of this species have been studied by Härtel (1937).

628. EUPHORBIA L. A summary of morphological interpretations of the cyathium, introducing recent theoretical considerations of the species-concept, is given by Croizat (1937).

628/14. EUPHORBIA PEPLUS L. Chromosomes (Schleswig-Holstein: Kiel) n=8.—Wulff (1937: 264).

628/16. EUPHORBIA LATHYRIS L. Recorded for Sweden by Hässler (1937), with a general account of the distribution of the species.

633/1. ULMUS MONTANA Stokes. A tree in Aberdeenshire is 16 ft. 7 in. in girth, 80-90 ft. high, forking at 20-25 ft.—Ainsley (1937).

634/1. HUMULUS LUPULUS L. Chromosomes of the Japanese var. *cordifolius* (Wild Hops) are described by T. Ono (1937) and compared with those of *H. Lupulus* L.: male plant and female plant differ in both.

642/1. BETULA VERRUCOSA Ehrh. Pollen: details of size and weight, etc., are given, and ecological relations discussed.—Pohl (1937).

643/1. ALNUS GLUTINOSA Gaertn. Pollen: details of size and weight, etc., are given, and ecological relations discussed.—Pohl (1937).

645/1. Corylus Avellana L. Pollen: details of size, weight, etc., are given, and ecological relations discusesd.—Pohl (1937).

649/1. Fagus sylvatica L. That the Beech is native and was not introduced by the Romans has been indicated by the presence of its pollen in peat from Northumberland, the Fens, and elsewhere. Confirmation is given by the identification of Beech charcoal from an Iron Age prehistoric hearth near Cardiff.—Hyde (1937).

Pollen: details of size, weight, etc., are given, and ecological relations discussed.—Pohl (1937).

87. Salicaceae Lindl. The possibility of crossing different species of *Salix* and *Populus* can be tested on cut twigs kept in vases, especially useful when the time of flowering is different, see Wettstein (1937), who gives an account of some hybrids of importance in basket work and horticulture.

651/2. Populus tremula L. A "giant" form ("*P. t. gigas*"), with foliage four to five times as large as normal, is described from Sweden (Medelpad) by Blomquist (1937). Its behaviour on crossing is mentioned by Wettstein (1937: 283), and its chromosomes (triploid: 57 ± 1) are described by Tometorp (1937).

656/1. Elodea canadensis Michx. The root hairs have been studied by Cormack (1937), who finds that root hairs—normally formed only in soil—are produced in water in the dark. In water and light the roots are green and possess a cuticle: in the dark not so. It is suggested that the cuticle formation is due to the presence of chlorophyll and its toughness prevents the formation of root hairs.

The meristem of the vegetative shoots is described by Chouard (1937).

678/1. Crocus nudiflorus Sm. The meristem of the vegetative shoots is described by Chouard (1937).

678/3. Crocus biflorus Mill. Chromosomes confirmed 2n=8.—Karasawa (1937).

93. Amaryllidaceae Lindl. The long-debated question of the nature of the "corona" is dealt with by Arber (1937). The evidence from a comparative study of the form and anatomy of the stamen-cup and "corona" is held to prove that the stamen-cup belongs to the androecium, while the "corona" of *Narcissus* is independent of the stamens and is best interpreted as an outgrowth of the perianth tube.

685/1. Galanthus nivalis L. Chromosomes: generally 2n=24 (4L+14M+6S) but variations occur and are discussed by Satô (1937 B).

686. Leucojum L. *L. vernum* [also var. *carpathicum*] and *L. aestivum*. Chromosomes [Japan ?] 2n=22 ("four classes"): Satô (1937 A), one pair with median constrictions distinguishable from remainder with subterminal constrictions.

688/1. Tamus communis L. A detailed discussion of the life-cycle of this species, under the headings fruit-ripening and seed-dispersal,

fertility, the seed between fruit-ripening and the emergence of the seedling, growth of the plant to maturity, and flowering, is given by Burkill (1937).

702/11. Allium Schoenoprasum L. "Pseudo-bivalent" chromosome formation following X-ray treatment is illustrated by Levan (1937).

703/1. Muscari racemosum L. Embryology described and figured; chromosomes n=27.—Wunderlich (1937: 48, 59, 74).

706/3. Endymion non-scriptus (L.) Garcke. The meristem of the vegetative shoots is described by Chouard (1937).

710. Tulipa L. The chromosome numbers of 71 species have been obtained, the basic number for the genus being 12. *T. sylvestris* L. is a tetraploid, 2n=48, and is considered to have been derived from the diploid *T. australis* Link (*T. Celsiana* Vent.). These two species have been much confused in Floras but have distinct distributions.—Hall (1937).

718/5. Juncus glaucus Ehrh. Chromosomes (Bot. Gard., Kiel) 2n=40.—Wulff (1937: 268).

721. Typha L. Pollen: details of size, weight, etc., given for both species, and the ecological relations discussed by Pohl (1937).

724/1. Acorus Calamus L. Perry (1937) discusses the history, distribution, medicinal properties, and commercial value of this species.

103. Naiadaceae Lindl. The origin of *Naias* and *Potamogeton* is discussed by Miki (1937), who thinks the former may be derived from submerged Hydrocharitaceae and the latter from Pandanales or Synanthae.

749/1. Schoenus nigricans L. The wide range of habitats, associated with very slight morphological variation, is regarded by Allorge (1937) as a problem: possibly physiological differences and several ecotypes exist.

750/1. Cladium Mariscus (L.) R.Br. The antecological study of this species is continued by Conway (1937): part iii. "The aeration of the subterranean parts of the plant." Leaves are of different types and air passes to the roots less easily in some types. In unaerated mud the roots depend for air on the bases of dead leaves and on leaves which though green are not growing.

753/45. Carex stricta Good. (*C. Hudsonii* Ar. Benn.). This species is abundant and ecologically important in Connecticut and Wisconsin, dominating tussock meadows along stream and pond margins on soils containing much organic matter. New tussocks grow from rhizomes emitted from the bases of old tussocks. The tussock habit is adapted to seasonal changes of water level, the rhizomes and roots having structure adapted to very wet conditions and the leaves a xeromorphic structure adapted to occasional desiccation. A long account of the ecology of the species is given by Costello (1936).

753/67. Carex arenaria L. Chromosomes (Schleswig-Holstein) 2n=64. —Wulff (1937: 267).

758/3. Spartina Townsendii H. & J. Groves. The floral morphology is described in detail by Curtis (1937).

780/6. Agrostis canina L. Chromosomes (Bot. Gard., Kiel) 2n=28.—Wulff (1937: 267).

787/1. Ammophila arenaria (L.) Link. Chromosomes (Schleswig-Holstein) n=14.—Wulff (1937: 267).

789/1. Aira caryophyllea L. Chromosomes (Schleswig-Holstein: Westensee) n=7.—Wulff (1937: 267).

813/1. Molinia coerulea (L.) Moench. An account of the Bavarian forms of this species is given by Paul (1937), who distinguishes "ssp. *M. coerulea* (Moench)" with several varieties from a subsp. "*M. litoralis* (Host)," with three further varieties.

824/2. Poa pratensis L. The seed setting has been investigated by Nilsson (1937 A), who finds pollen necessary for seed development. The percentage of normal pollen varies, and also the seed setting, which is higher in open-pollinated plants, but the bagging to ensure self-pollination may for purely physiological reasons have a lowering effect.

824/14. Poa annua L. A study of the chromosome numbers of this species 2n=28, [14b] *P. supina* Schrad. 2n=14, and [14g] *P. exilis* (Tomm.) Murb. 2n=14 is given by Nannfeldt (1937 B). *P. annua* is intermediate in most characters between the other two, and the possibility of its hybrid origin is discussed. The characters are set out at some length on pp. 248-9.

824/14b. Poa annua L., var. varia Gaud. (*P. supina* Schrad.). This plant is considered by Nannfeldt (1937 C) as a distinct species from *P. annua*, and he gives details (with a map) of its distribution in Scandinavia.

827/19. Bromus hordeaceus L. Artificial hybrids between this and *B. mollis* are described by Nilsson (1937 B): they are almost completely fertile and the F_2 generation shows great variation.

827/19(2). Bromus lepidus O. R. Holmberg. Some further details of the distribution of this species are given by H. Hylander (1937): partly from Sweden (Göteborg, Stockholm, Uppsala) and partly from Germany (Rügen). Commonly it is associated with newly sown English Rye-grass and with *B. mollis* (sometimes *B. arvensis*).

834/1. Nardus stricta L. Anatomy, mode of growth and Nardeta are described by Busch (1937: Russian only).

839/1. Juniperus communis L. Pollen: details of size, weight, etc., are given, and ecological relations discussed.—Pohl (1937).

840/1. Taxus baccata L. Pollen: details of size, weight, etc., are given, and ecological relations discussed.—Pohl (1937).

841/1. Pinus sylvestris L. Pollen: details of size, weight, etc., are given, and ecological relations discussed.—Pohl (1937).

844. Equisetum L. Hydathodes of the epithem type, reported for the twenty-two species studied, are described in detail by Johnson (1937), who states that they are of no value in determining the degree of relationship between the species.

854/4. Polystichum Lonchitis (L.) Roth. This has now been found in Bohuslän, Sweden: Binning (1936).

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Note.—This bibliography refers not only to the Abstracts from Literature but to the contents of the Report in general, except such papers as may have their own bibliography.

Abbreviations of Titles of Periodicals

additional to lists previously published in *B.E.C. 1935 Rep.*, 153-155 (1936) and *B.E.C. 1936 Rep.*, 383 (1937).

ASN, Bot.=Annales des Sciences Naturelles, Botanique.
B.Bayer.B.G.=Berichte der Bayerischen Botanischen Gesellschaft.
Contrib. Gray Herb.=Contributions from the Gray Herbarium of Harvard University.
Emp.For.J.=Empire Forestry Journal.
J.Ind.BS.=The Journal of the Indian Botanical Society.
JRHS.=The Journal of the Royal Horticultural Society.
Orch.Rev.=The Orchid Review.
P.Bristol NS.=The Proceedings of the Bristol Naturalists' Society.
Sov.Bot.=Sovietska Botanica.
Wilts.A.M.=The Wiltshire Archaeological and Natural History Magazine.

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SUPPLEMENT.

PANEL OF REFEREES.

The rules of our Society provide for the preparation from time to time by the Committee of a list of Referees for the naming of critical groups or special plants. The Editorial (Publications) Sub-Committee, to whom the preparation of this list is delegated, have decided that a Panel of Referees should be formed consisting of all those botanists who are contributing to the *New Students' British Flora*, now in course of preparation. The immediate benefit of this arrangement to the members of this Society is obvious, while in addition it is hoped that much assistance will be obtained in the revision-work which will be necessary in connection with new editions of the *British Plant List* and of the *Comital Flora*, which may be called for before long.

The contributors to the *New Students' British Flora* have accordingly been invited to join the B.E.C. Panel of Referees and below are set out their names and addresses, the families (or other groups) which they have undertaken, and in several cases special notes as to desiderata, collecting methods and so on. Practically all these gentlemen have consented to act: in a very few cases replies have not yet been received but it is anticipated that these too will be favourable.

Regard should be had to the following considerations:—

i. Although the Referees collectively cover all the families of Phanerogams and Pteridophytes in the British flora, it is not intended that the help of Referees should be enlisted for the general naming of plants for members. For this purpose plants should continue to be submitted to the Honorary Secretary.

ii. Referees will receive for naming plants of groups which are known to be critical.

iii. Plants showing variation from type, plants suspected to be of hybrid origin, and gatherings illustrating extensions of geographical range will also be acceptable. Information as to status, habitat, soil, etc., is valuable.

iv. Fresh or dried material may be submitted. Fresh material should always be sent in *tins* (but see special instructions as to *Salicornia*), and such material will not be returned to the sender except in special circumstances and by arrangement. Dried material will only be returned if the sender encloses the cost of return postage.

v. It cannot be emphasized too strongly that Referees will not wish to see material of plants which are notable only for their rarity.

Changes which may occur from time to time in the constitution of the panel and notes as to special desiderata will be published in the Society's Reports. It is hoped that the members of this Society will respond readily to this opportunity of contributing to botanical work of national importance by supplying Referees with the material they require.

PANEL OF REFEREES.

NOTE.—The family names used and the sequence of genera are taken from the 11th edition of the *London Catalogue*.

AIRY-SHAW, H. K., Royal Botanic Gardens, Kew, Surrey

ERICACEAE.
MONOTROPACEAE.
VACCINIACEAE.

ALSTON, A. H. G., British Museum (Natural History), Cromwell Road, London, S.W.7.

EQUISETACEAE.
FILICES.
LYCOPODIACEAE.
MARSILEACEAE.
SALVINIACEAE.
SELAGINELLACEAE.

Mr Alston is especially interested in hybrid ferns and would like to see any suspected of hybrid nature. He would also be glad to have more material of the following:—*Equisetum litorale*; *E. hyemale*; *Asplenium lanceolatum* var. *oboratum*, var. *mierodon*; *A. Adiantum-nigrum* var. *serpentini*, var. *aeutum*, var. *microdon*; *A. Ruta-muraria* var. *elatum*, var. *pseudo-germanieum*; *Polystichum angulare* var. *hastulatum*, var. *atatum*, var. *Braunii*; *P. aeuteatum* var. *lobatum*; *Lastraea Filix-mas* var. *pumila*, var. *abbreviata*; *L. spinulosa* var. *glandulosa*; *L. aristata* var. *tanaeetifolia*, var. *lepidota*; *Botrychium Lunaria* var. *incisum*; *Ophioglossum vulgatum* var. *polyphyllum*; *Azolla earoliniana* (the true plant as opposed to *A. filicutoides*).

ANTHONY, J., Royal Botanic Gardens, Edinburgh, 4.

LABIATAE (except *Mentha*, *Origanum*, *Thymus*, *Calamintha*, *Salvia*, *Prunella*, and *Galeopsis*).

Mature seeds are required of *Ajuga Chamaepitys* Schreb., *Stachys germanica* L., *S. arvensis* L., *Teucrium Scordium* L., *T. Botrys* L., *T. Chamaedrys* Benth., and *Ballota ruderatis* Sw.

ASH, G. M., Lower Birtley Farm, Witley, Surrey.

ONAGRACEAE (except *Oenolhera*).

Epilobium material, fresh if possible, is welcome, together with as much information as possible as to other species growing in the neighbourhood.

BAKER, E. G., British Museum (Natural History), Cromwell Road, London, S.W.7.

MALVACEAE.
PLANTAGINACEAE.

Material agreeing with the descriptions of the new varieties of *Plantago* printed on p. 455 is especially desired.

BALLARD, F., Royal Botanic Gardens, Kew, Surrey.

CYPERACEAE (except *Carex*).

BRITTON, C. E., 85 Hamsey Green Gardens, Warlingham, Surrey.

POLYGONACEAE (except *Rumex*).
RUBIACEAE.
SCROPHULARIACEAE (*Melampyrum*).

Plants submitted should be as complete as possible. In the case of *Metampyrum* they should be carefully gathered so as to show the root and lower leaves, and not less than four examples of any one gathering.

BULLOCK, A. A., Royal Botanic Gardens, Kew, Surrey.

ARALIACEAE.
CAPRIFOLIACEAE.
CORNACEAE.
FRANKENIACEAE.
LYTHRACEAE.

Notes on frequency, soil, etc., are welcomed and, in the case of *Lythraceae*, notes on the relative frequency of the various sexual (heterostylic) forms.

BURTT, B. L., Royal Botanic Gardens, Kew, Surrey.

DIPSACACEAE.
LEGUMINOSAE (*Vicia* and *Lathyrus*).
VALERIANACEAE.

The distribution of the forms recognized by Drabble (*B.E.C. 1932 Rep.*, 249, 1933) as *Valeriana angustifolia* and *V. sambucifolia* is very imperfectly known. Mr Burtt will be glad to see specimens from as many localities as possible, accompanied by notes on habitat, etc.

BUTCHER, Dr R. W., 68 St James' Street, Nottingham.

CRUCIFERAE (except *Barbarea*).
NAIADACEAE (*Zannichellia* and *Naias*).
RANUNCULACEAE.

CLARK, Dr W. A., Dept. of Botany, King's College, Newcastle-on-Tyne, 2.

CONVOLVULACEAE.
HYPERICACEAE.
SOLANACEAE.

Dr Clark will be pleased to receive material in any of these groups.

DANDY, J. E., British Museum (Natural History), Cromwell Road, London, S.W.7.

ALISMATACEAE.
ERIOCAULACEAE.
HYDROCHARITACEAE.
NAIADACEAE (except *Zannichellia*, *Zostera* and *Naias*).

Dr G. Taylor (see below) is co-operating with Mr Dandy in *Potamogeton* and *Ruppia*. They appeal to collectors (a) to submit any material of *Potamogeton*, whether new or old, in order that they may revise all previous determinations, and (b) to make special efforts to collect Potamogetons in *new* localities, as it is desired to make as complete a record as possible of the distribution of each species.

Collectors visiting Ireland are asked to collect Potamogetons from the Inny River below Ballymahon, where it forms the boundary between Counties West Meath and Longford, about 3 miles from Lough Ree. In 1885 R. M. Barrington collected here a *Potamogeton* which looks like the very rare hybrid, *P. sparganifolius* (*P. Kirkii*), but the specimen is too poor for certain identification.

EXELL, A. W., British Museum (Natural History), Cromwell Road, London, S.W.7.

ELATINACEAE.
NYMPHAEACEAE.
PORTULACEAE.
RESEDACEAE.
TAMARICACEAE.

GATES, Prof. R. R., University of London, King's College, Strand, London, W.C.2.

ONAGRACEAE (*Oenothera*). Material and seeds of any species naturalized in Britain are required.

GILMOUR, J. S. L., Royal Botanic Gardens, Kew, Surrey.

ARACEAE.
GENTIANACEAE (except *Gentiana*).
LABIATAE (*Prunella and Galeopsis*).
LEGUMINOSAE (except *Lupinus* to *Ononis*, *Anthyllis*, *Vicia* and *Lathyrus*).
OLEACEAE.
POLEMONIACEAE.

Gentianaceae. Material is required of the narrow-leaved Centauriums grouped under *C. littorale*, especially from the southern coasts of England. *Labiatae*. Material is required of forms of *Galeopsis Ladanum* and *G. Tetrahit*, especially of the broad-leaved forms of the former which have been called *G. intermedia*, and of the forms of *G. Tetrahit* which have been called *G. bifida*.

HALL, P. M., 12 High Street, Fareham, Hants.

LENTIBULARIACEAE.
ORCHIDACEAE.
VIOLACEAE.

For desiderata in *Utricularia* and *Viola* see *B.E.C. 1936 Rep.*, 217-218, 1937.

HOWARTH, Dr W. O., Botany Dept., The University of Manchester, Manchester, 13.

GRAMINEAE (*Festuca*). Dr Howarth would be glad to receive *any* varieties, particularly the *glaucous* (grey-green) and *pruinose* (waxy) forms of *ovina* and *rubra*, including the coastal forms of the latter. Will anyone collecting "on the heaths around Bury St Edmunds," look out for forms of *F. ovina* which Smith called *F. caesia*?

In collecting *Festuca*, it should be noted that the rooting part is as important as the flowering part. Points of importance are presence or absence of stolons, intravaginal and extravaginal branching, closed or open sheaths to sterile shoots. Information as to habitat is of value. Material from Scotland and Ireland is particularly desired.

HUBBARD, C.E., Royal Botanic Gardens, Kew, Surrey.

GRAMINEAE (except *Agrostis* and *Festuca*). Specimens of *Poa*, *Bromus* and *Agropyron* are required, especially from Scotland, Wales, Ireland and the northern counties of England.

HYDE, H. A., Dept. of Botany, National Museum of Wales, Cardiff.

TILIACEAE. See paper in *Report* for 1937.

JACKSON, A. B., 3 The Avenue, Kew Gardens, Surrey.

CRUCIFERAE (*Barbarea*).
CONIFERAE.
SALICACEAE (*Populus*).

Material of *Barbarea* and *Populus* will be welcomed.

JACKSON, A. K., Royal Botanic Gardens, Kew, Surrey.

CRASSULACEAE.
LABIATAE (*Origanum*).

LOUSLEY, J. E., 7 Penistone Road, Streatham Common, London, S.W.16.

COMPOSITAE (*Cichorium* to *Crepis*, *Hypochaeris*, *Leontodon*, *Lactuca* to *Scorzonera*).
POLYGONACEAE (*Rumex*).
SCROPHULARIACEAE (except *Euphrasia*, *Rhinanthus* and *Melampyrum*).

Mr Lousley will be especially pleased to see fresh or dried material of *Rumex* for examination. This should be in ripe fruit wherever possible and should include the lowest leaves obtainable. In the case of suspected hybrids details of the associated species will be appreciated. Alien species of *Rumex* are particularly desired.

MARSDEN-JONES, E. M., Church House, Potterne, Devizes, Wilts.

ROSACEAE (*Geum*).

—— (with Dr W. B. TURRILL).

COMPOSITAE (*Centaurea*). Fresh material and ripe seed are desired of *C. Calcitrapa*, *C. Solstitialis* and *C. paniculata*, and dried material of the *nigra*, *nemoralis* and *Jacea* groups would be valuable.

—— (with Prof. F. E. WEISS).

PRIMULACEAE (*Anagallis*). Blue-flowered Pimpernels, fresh material preferred, would be very welcome and may be sent to either Referee.

MELVILLE, Dr R., Royal Botanic Gardens, Kew, Surrey.

LINACEAE.
PRIMULACEAE (except *Anagallis*).
URTICACEAE.

METCALFE, E. H., Dept. of Horticultural Botany, Reading.

LABIATAE (*Mentha*). With A. L. Still (see below).

MILNE-REDHEAD, E., Royal Botanic Gardens, Kew, Surrey.

CAMPANULACEAE. Living plants or seeds are required of *Campanula rotundifolia*, especially from Scotland and Ireland.

NELMES, E., Royal Botanic Gardens, Kew, Surrey.

CYPERACEAE (*Carex*). A look-out should be kept for *C. trinervis* on the east coast. Material of the more uncommon, especially Scottish, species would be welcome, as well as material of forms, varieties and hybrids.

NORMAN, C., British Museum (Natural History), Cromwell Road, London, S.W.7.

UMBELLIFERAE.

PHILIPSON, W. R., British Museum (Natural History), Cromwell Road, London, S.W.7.

COMPOSITAE (*Eupatorium* to *Senecio*).
GRAMINEAE (*Agrostis*).

PUGSLEY, H. W., 81 Alexandra Road, Wimbledon, London, S.W.19.

AMARYLLIDACEAE.
COMPOSITAE (*Hieracium*).
FUMARIACEAE.
GENTIANACEAE (*Gentiana*).
JUNCACEAE (*Juncus alpinus*).
LABIATAE (*Calamintha* and *Salvia*).
OROBANCHACEAE.
PLUMBAGINACEAE.
SCROPHULARIACEAE (*Euphrasia*).

Mr Pugsley cannot undertake to name *Hieracia* until his revision of the genus is completed.

It is desired that fresh specimens only of *Orobanche* should be sent.

RICHARDS, Dr P. W., The Botany School, Cambridge.

JUNCACEAE (except *Juncus alpinus*).

SEALY, J. R., Royal Botanic Gardens, Kew, Surrey.

ACERACEAE.
AQUIFOLIACEAE.
CELASTRACEAE.
LEGUMINOSAE (*Lupinus* to *Ononis*).
RHAMNACEAE.

SLEDGE, Dr W. A., Botany Dept., The University, Leeds, 2.

ARISTOLOCHIACEAE.
COMPOSITAE (*Carlina* to *Serratula*).
ELAEAGNACEAE.
EUPHORBIACEAE.
LORANTHACEAE.
SANTALACEAE.
THYMELEACEAE.

STEARN, W. T., 63 Priory Road, Kew, Surrey.

APOCYNACEAE.
BERBERIDACEAE.
DIOSCOREACEAE.
IRIDACEAE.
LILIACEAE.

STILL, A. L., Roslyn, Dower Avenue, Wallington, Surrey.

LABIATAE (*Mentha*). — With E. H. Metcalfe (see above).

TAYLOR, Dr G., British Museum (Natural History), Cromwell Road, London, S.W.7.

NAIADACEAE (*Potamogeton* and *Ruppia*). — With J. E. Dandy (see above).
PAPAVERACEAE.
VERBENACEAE.

TURRILL, Dr W. B., Royal Botanic Gardens, Kew, Surrey.

CARYOPHYLLACEAE. — Dr Turrill makes the reservation that material sent for naming will, if required, be retained for the Herbarium at Kew.

COMPOSITAE (*Centaurea* and *Taraxacum*).
ILLECEBRACEAE.
LEGUMINOSAE (*Anthyllis*).

With E. M. Marsden-Jones (see above).

TUTIN, T. G., The Botany School, Cambridge.

CERATOPHYLLACEAE.
LEMNACEAE.
NAIADACEAE (*Zostera*).
TYPHACEAE.

Material of *Sparganium* and *Zostera* is required, also flowering *Lemna* (in spirit). Spirit material of flowering and fruiting *Zostera* is also a great aid to identification.

VALENTINE, D. H., The Botany School, Cambridge.

CUCURBITACEAE.
ROSACEAE (*Spiraea*, *Dryas*, *Fragaria*, *Potentilla*, *Agrimonia* and *Poterium*).

Living (rooted) specimens are required of *Agrimonia odorata* and *Poterium muricatum*.

WADE, A. E., Dept. of Botany, National Museum of Wales, Cardiff.

BORAGINACEAE.

Fresh material is required of the following:—*Symphytum tuberosum*, *Mertensia maritima*, *Echium plantagineum*, *Myosotis brevifolia* and *M. sicula*.

WARBURG, Dr E. F., 4 Brookside, Cambridge.

CISTACEAE.
CUPULIFERAE.
GERANIACEAE.
MYRICACEAE.
ROSACEAE (*Prunus*, *Pyrus* to *Cotoneaster*).

In collecting *Erodium* the following points should be noted:—Flower-colour; whether petals are spotted or not, and whether equal or unequal: colour of anthers: colour of stigmas.

In collecting *Betula* it is important to collect from several trees from the same locality, as considerable variation occurs and not enough is known of the genus at present for selecting isolated specimens to be determined. Such collections, particularly from the Midlands and north of England, would be welcomed.

WATSON, WM., 245 Southlands Road, Bickley, Kent.

ROSACEAE (*Rubus*).

Specimens should be collected from bushes growing in the open. A panicle or flowering branch about 12 inches long should be selected on which the terminal flowers have gone over but other flowers are still open and in bud. In addition one or two pieces of the non-flowering stem should be taken about three feet from the base of the stem, each piece about three inches long and bearing in the middle a single perfect leaf. The exact colour of the petals, the stamens and the styles in the unclosing flower should be observed through a lens and recorded on the label. Starved, immature or shade-grown examples should be avoided. The

ROSACEAE (*Rubus*): *Continued.* object should be to obtain an average specimen from a strongly growing bush at the height of its flowering activity. If the drying papers are changed morning and evening for the first three days, taking care that thoroughly dry paper is used, and then once a day only, the specimens will be dried in six or seven days and the leaves and flowers will retain their natural colour. Screw pressure is essential. It gives more satisfactory results if the specimen is put straight into paper between wires or boards in the field, and is transferred to the press later in the same day.

WEISS, Prof. F. E., Easdale, Woodway, Merrow, Guildford, Surrey.

PRIMULACEAE (*Anagallis*). With E. M. Marsden-Jones (see above).

WILMOTT, A. J., British Museum (Natural History), Cromwell Road, London, S.W.7.

AMARANTHACEAE.
CHENOPODIACEAE.
DROSERACEAE.
EMPETRACEAE.
HALORAGACEAE.
LABIATAE (*Thymus*).
POLYGALACEAE.
ROSACEAE (*Alchemilla* and *Sorbus*).
SALICACEAE (*Salix*).
SAXIFRAGACEAE.
SCROPHULARIACEAE (*Rhinanthus*).

Salicornia. Mr Wilmott would be glad to receive fresh material from parts of our coast other than between (and including) Dorset eastwards to Kent and thence north to Norfolk. Material from West and North Wales, and from any part of Ireland, is particularly wanted. Packing should be in cardboard box, not tin, and specimens separated by a sheet of newspaper to prevent "sweating." Collect when in full flower (as seeds begin to ripen), not before second half of September in normal circumstances.

WOLLEY-DOD, Lt.-Col. A. H., Berkeley Cottage, Mayfield, Sussex.

ROSACEAE (*Rosa*).

REPRINTS, &c. for SALE.

Practically all the chief papers printed in the Reports can be obtained from the Honorary Secretary, Yardley Lodge, Crick Road, Oxford. Below are given a selection of those to be had.

B.E.C. Reports, 1879-1934 (complete). Ten volumes,	£15	15	0
The Comital Flora of the British Isles. Special price to members: Bound, 15s; Paper Covers, 12s 6d; Interleaved Copies, 3s 6d extra. All postage free.			
The Flora of Northamptonshire,	1	0	0
Additions to The Flora of Berkshire. Druce,	0	2	0
Flora of Zetland. Druce. Two parts,	0	3	0
Flora of West Ross. paper covers, 4s 6d; bound in cloth,	0	6	0
Flora of Foula. Turrill,	0	1	0
Adventive Flora of the Port of Bristol. Sandwith,	0	2	0
Adventive Flora of the Port of Cardiff. Wade and Smith,	0	1	0
List of Glamorganshire Plants. Vachell,	0	2	0
List of Plants from the Isle of Wight. Drabble and Long,	0	2	0
The Genus Bursa. Almquist and Druce,	0	2	0
The Genus Thymus. Ronniger,	0	2	0
Melampyrum. Beauverd,	0	1	0
Menthae Britannicae. Fraser,	0	2	0
British Batrachia. Pearsall,	0	2	0
British Species of Callitriche. Pearsall,	0	1	0
British Erophila. Druce,	0	2	0
Notes on Potamogeton (two parts, ex 1929-1930 Reports). Pearsall,	0	2	0
N.W. European Juncus alpinus forms. Lindquist,	0	2	0
Key to Rubi of London Cat. Rilstone,	0	2	0
Extinct and Dubious Plants of Britain. Druce,	0	2	0
British Plants in The Du Bois Herbarium. Druce,	0	1	0
Samuel Brewer's Diary. Hyde,	0	2	0
Oxford Botanic Gardens. Druce,	0	2	0
British Brambles. Trower, cloth, 6s; paper,	0	3	0
Herbal, 1633. Johnson's Gerard. Title page missing,	5	0	0
Woods' Tourist's Flora,	0	10	0
Edmondston's Flora of Shetland. 2nd edition, 1903,	0	2	0
Sketches of Botany, 1890. Pulteney. 2 vols.,	0	18	0
Sowerby's English Botany, 3rd edition. One copy in new condition; 12 vols., in original green cloth,	11	0	0
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THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

REPORT FOR 1937

OF THE

BOTANICAL EXCHANGE CLUB

(CONVENIENTLY ABBREVIATED B.E.C. REP.)

BY THE

DISTRIBUTOR,

JOHN F. G. CHAPPLE, Esq.

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September 1938

THE BOTANICAL SOCIETY AND EXCHANGE CLUB OF THE BRITISH ISLES.

(VOL. XI. PART VI).

Victoria Regina.

Floreat flora.

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The Subscription, £1 per annum for Exchange Members, and 10s per annum for Ordinary Members, became due on January 1, 1938, and should be sent to

THE HONORARY SECRETARY,
YARDLEY LODGE, CRICK ROAD, OXFORD.

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PRINTED BY T. BUNCLE & CO. LTD., ARBROATH.
SEPTEMBER 1938.

REPORT OF THE DISTRIBUTOR FOR 1937.

The last two Distributors have both had to report a serious diminution in the number of specimens contributed, and it is my unfortunate duty to have to record yet another decline both in the number of gatherings and in the number of sheets contributed. Seventeen members sent in 1752 sheets representing 144 gatherings. This also represents a falling off in the number of active members of the Exchange Club—a feature regrettable in itself—and one that every member should do his utmost to remedy by the encouragement and enlistment of new collectors.

All the material, with very few exceptions, was well prepared, and was submitted in accordance with the Rules, thus doing much to lighten the Distributor's task. If there is anything that members should be reminded about, it is that specimens should not exceed 18 inches in length, and, as a good many Herbarium sheets are only 15 inches long, that would be a more convenient standard to aim at; also, that each gathering should consist of not less than 10 sheets, otherwise there remains little or nothing for distribution to individual members after the needs of the public Herbaria and Referees have been supplied.

Most of the critical genera are represented—even if only by single gatherings—but, as has been remarked, uncritical and unvarying species of a Bentham and Hooker standard (unless of topographical interest) ought soon to find no place in the distribution of a Club which exists for the exchange "of plants of known critical or special interest." It is a cause for regret that *Hieracium*, *Salix* and the Palmate Orchids are not represented in this distribution. Among the more notable plants sent in were *Geranium Endressi*, var. *Thurstonianum*, *Euphrasia montana*, × *Mentha Mulleriana*, var. *serratifolia*, *Prunella laciniata* × *vulgaris*, *Vallisneria spiralis* and *Zostera Hornemanniana*.

The thanks of the Club are due to all those who contributed notes, and to the following Referees for their criticisms:—H. K. Airy-Shaw, G. M. Ash, E. G. Baker, E. B. Bishop, C. E. Britton, Dr R. W. Butcher, J. E. Dandy, P. M. Hall, Dr W. O. Howarth, C. E. Hubbard, A. B. Jackson, J. E. Lousley, Dr R. Melville, E. Nelmes, H. W. Pugsley, Rev. H. J. Riddelsdell, A. L. Still, T. G. Tutin, Wm. Watson, A. J. Wilmott, and Lt.-Col. A. H. Wolley-Dod.

JOHN F. G. CHAPPLE.

Yardley Lodge, Oxford,
May 10th, 1938.

LIST OF PARCELS RECEIVED.

	Sheets.	Gatherings.
G. M. Ash	25	2
E. B. Bishop	79	6
G. C. Brown	36	4
J. F. G. Chapple	320	24
E. S. Edees	53	4
J. D. Grose	113	10
P. M. Hall	63	5
H. H. Johnston	14	1
J. W. Long	100	6
Nottingham Public Nat. History Museum	89	9
F. Rilstone	135	9
C. M. Rob	101	9
N. D. Simpson	47	4
W. A. Sledge	82	6
National Museum of Wales	188	20
E. C. Wallace	217	16
C. Waterfall	90	9
	1752	144

Thalictrum ? montanum Wallr. (Ref. No. P.36.) 45, Pembroke; maritime cliffs near Penally, July 31st, 1937.—J. F. G. CHAPPLE. "Although the plants of the coastal sand-dunes of Scotland are usually fairly constant in form on the eastern side, there is greater polymorphism on the west, which reaches its greatest confusion, apparently, in Pembrokeshire. The example before me has characters both of *T. arenarium* and *T. montanum*, but further study of the plant is required before its status can be properly described."—R. W. BUTCHER.

Thalictrum majus Crantz. (Ref. No. 3060.) 85, Fife; rocky shore of the Forth, N. Queensferry, July 17th, 1937.—E. C. WALLACE. "Yes."—R. W. BUTCHER.

Ranunculus trichophyllus Chaix. (Ref. No. O.320.) 23, Oxon; pond, Lower Heyford, May 15th, 1937.—J. F. G. CHAPPLE. "Yes."—R. W. BUTCHER.

Ranunculus radians Revel. (Ref. No. O.310.) 23, Oxon; pond near Menmarsh, April 28th, 1937. Flowers large. Carpels "bottle-necked" with a few bristles on the ventral shoulders. Peduncles rather short, curved at the base. Floating leaves rather scarce, deeply divided (to the base in the majority), underside and petioles very hairy. Submerged leaves quite rigid—none of these specimens were "floated out." —J. F. G. CHAPPLE. "So I should say at the moment, though I am often at a loss to discover what constant taxonomic characters (except rigid leaves) separate this from *R. heterophyllus* Weber."—R. W. BUTCHER.

Ranunculus heterophyllus Weber. 62, N.E. Yorks; pond, Gallow Green, Topcliffe, May 15th, 1937.—C. M. ROB. "Yes; in this form it is unmistakable and typical, and corresponds almost exactly to one of the plants in Herb. Linnaeus labelled *R. aquatilis*."—R. W. BUTCHER.

Ranunculus heterophyllus Weber, var. *submersus* Bab. (Ref. No. O.316.) 23, Oxon; pond on Otmoor, May 4th, 1937.—J. F. G. CHAPPLE. "Yes; distinguished by size of flower and collapsing leaves."—R. W. BUTCHER.

Ranunculus ——. 64, Mid-west Yorks; pond between Fountains and Markington, June 11th, 1937.—C. M. ROB. "Very good examples of *R. heterophyllus*, var. *submersus* Bab."—R. W. BUTCHER.

Ranunculus Drouetii F. Schultz. Det. R. W. Butcher. (Ref. No. O.340.) 23, Oxon; pond, Marston Meadows, May 18th, 1937. Flowers exceptionally small, 6-10 mm. across when fully expanded. Receptacle hairy. Carpels slightly hairy. Peduncles short, curved—chiefly at the base. Submerged leaves collapsing. This is, I think, the plant understood as *Drouetii* in this country, but it is doubtful if it is Schultz's plant

of the Continent which appears to have totally glabrous carpels, and is a plant with a more slender habit."—J. F. G. CHAPPLE.

Ranunculus pseudo-fluitans Baker & Foggitt. (Ref. No. 3061.) 12, North Hants; stream near Hazeley Heath, May 30th, 1937.—E. C. WALLACE. " This is quite distinct in habit, size of flower and shape of floating leaf from what I interpret to be the type of *R. pseudo-fluitans* Baker & Foggitt. This is undoubtedly *R. peltatus*, var. *penicillatus* Dumortier, which is not synonymous with *R. pseudo-fluitans* B. & F."—R. W. BUTCHER.

Fumaria occidentalis Pugsley. 1, W. Cornwall; Lambourne Hill, Perranzabuloe, May 31st, 1937.—F. RILSTONE. " Good specimens of a rampant form of this rare species."—H. W. PUGSLEY.

Fumaria muralis Sonder. 50, Denbigh, under *Brassica* in old quarry near Rhos-on-sea, July 25th, 1937.—C. WATERFALL. " This is only *F. officinalis* L."—H. W. PUGSLEY.

Fumaria micrantha Lag. 14, E. Sussex; cultivated land, Glynde, October 17th, 1937.—E. C. WALLACE. " Correct."—H. W. PUGSLEY.

Barbarea vulgaris R. Br., var. *transiens* Druce? 1, W. Cornwall; weed of garden and waste ground, Lambourne Hill, April 26th, 1937 (leaves winter). This plant matches a specimen (Tyndall's Park, Bristol, June 16th, 1923) received through the B.E.C. in 1924. Mr J. W. White, the collector, stated that the plant then distributed was similar to one from Wellsway, Bath, accepted by Dr Druce as his variety, and also put to var. *transiens* by Mr A. B. Jackson (*Journ. Bot.*, 208, 1916). White says he was attracted to the plant by the darker yellow of the petals and the peculiar upper leaves which, instead of being merely toothed, were pinnatifid, with longish linear basal lobes, while the pods were those of *vulgaris* type. White adds his own comment:—" As stated by Druce, the plant has a stout much-branched habit and conspicuous flowers, but its marked feature lies in the linear pinnae of the upper leaves that exceed the terminal lobe in width." The plants now sent have these characters and also agree with the Bristol plant in the somewhat triangular outline of the terminal lobe of the basal leaf, though that has not, as these have, the uppermost pair of pinnae broader than the terminal leaflet. In fact, these Cornish plants appear to have the foliage of *intermedia* but the subulate-pointed pods of *vulgaris*.—F. RILSTONE. " The short account of var. *transiens* in the *Fl. of Berks.* deserves consultation. There Druce wrote ' leaves with a rather oblong terminal lobe, the lateral linear lobes much exceeding in length the breadth of the terminal lobe.' It will be seen that there is no reference to the position on the plant that the described leaves occupied, but A. Bruce Jackson, in his account of this variety, ascribed Druce's characters to the *lower* stem-leaves, and somewhat modified that account by saying that the terminal lobe was ' oblong

cuneiform.' As Mr Rilstone's specimens have a somewhat rounded terminal lobe I am afraid that they cannot quite accurately be placed to Druce's var. *transiens*."—C. E. Britton. "I suppose this is what Druce would have called his var. *transiens*, although I have seen more extreme forms. The degree of lobing in the upper leaves of *B. vulgaris* varies greatly, even on a single plant, and I have come to the conclusion after examining much material that the variety is hardly worth distinguishing. I have not noticed any difference in the colour of the flowers. The foliage of *B. intermedia* is quite distinct from *B. vulgaris*, being of a much darker shining green."—A. B. Jackson.

Draba muralis L. 1, W. Cornwall; weed in nursery gardens, Truro, May 1937.—Coll. Miss K. M. Skinner; comm. F. Rilstone.

Brassica oleracea L. 50, Denbigh; old quarry near Rhos-on-Sea, August 21st, 1937.—C. Waterfall.

Bursa ——. 1, W. Cornwall; Lambourne Hill, Perranzabuloe, June 1st, 1937. A pretty form with rosette closely pressed to the stony ground.—F. Rilstone.

Viola canina L. × *stagnina* Kit. 23, Oxon; Otmoor, May 26th, 1937 (Ref. No. 1982); June 5th, 1937 (Ref. No. 2017). I am indebted to Mr Hall for the determination of this plant, and to Mr Brenan for introducing me to the locality which had been given him by Mr Polunin as a locality for *V. stagnina*. The specimen gathered a few years ago and labelled *V. stagnina*, in Herb. Kew, is (*teste* Brenan) *canina* × *stagnina*. This hybrid is abundant over a restricted area, and, on the drier ground, is associated with *V. canina*. Repeated search over a period of several weeks failed to reveal the presence of *V. stagnina*.—J. F. G. Chapple. "I visited the locality with Mr Chapple in June 1937, and although no *V. stagnina* could be found, its presence in these hybrids was clear from the following characters seen in various combinations:—Strongly caespitose, floriferous habit; sterility; flowers paler than *V. canina* with more rounded petals; spurs shorter than in *V. canina*, sometimes depressed and green as in *V. stagnina*; narrower subcordate-truncate leaves; foliose stipules."—P. M. Hall.

Viola ——. 62, N.E. Yorks: cornfield, Topcliffe Station, August 15th, 1937.—C. M. Rob. "This gathering is difficult to place under the arrangement proposed by the late Dr E. Drabble, but I consider it comes best under *V. Lloydii* Jord. The plants are up-drawn through growing in a corn crop, and this obscures some of the characters said to be typical of *V. Lloydii*. However, very few of the leaves can be described as acute, and this coupled with the sub-foliaceous, often crenate, mid-lobes of the upper stipules, and with the broad sepals and large appendages indicates *V. Lloydii* in preference to *V. Lejeunei* Jord. It is to be noted that the later gathered plants are more typic-

ally leafy above, and they also show that the size of flower decreases as the season advances."—P. M. Hall.

Gypsophila elegans M. Bieb. 41, Glamorgan; waste ground, Pengam, Cardiff, June 1937.—Coll. A. E. Wade and R. L. Smith; comm. Department of Botany, National Museum of Wales.

Stellaria media Vill., var. *apetala* (Ucria) [= *Boraeana* (Jord.) = *pallida* Dum.]. (Ref. Nos. 808, 809, 813, 814, 815.) 32, Northants; various gatherings in 1934 and 1935 from Bainton.—Coll. Mrs C. L. Wilde; comm. E. B. Bishop. Following *British Plant List* I use above name, but my own inclination is to follow *London Catalogue*, 11th ed., and give it specific rank. (1) Wall of farmyard, May 21st, 1934. Sepals glabrous, as are most peduncles. (2) Same station and date as (1), with similar sepals and peduncles, but with longer internodes. (3) Same station as (1) and (2), April 19th, 1935. Characters as in (2), except that stems are stouter. (4) From four separate ant-hills in field at Ashton, seemingly all of same form, April 19th, 1935. Sepals and peduncles pubescent, usually rather densely so; colour of leaves darker green, not of that pale yellowish green of the previous three, which seems typical of the var. (or species), and probably suggested to Du Mortier his name of *pallida*. (5) By railway, near Ballast Pits, April 28th, 1935. Sepals and peduncles densely pubescent; internodes long; colour as in (4).—E. B. Bishop. "In Béguinot's classification (*N. Giorn. Bot. Ital.*, n.s., *17*, 348-390: 1910) the following would probably be the approximate determinations:—*Ran.* 808, 809, and 813: *S. media* (L.) Cyr., ssp. *apetala* (Ucria) Bég., var. *glabella* (Jord. & Fourr.) Rouy & Fouc. *Ran.* 814: *S. media* (L.) Cyr., ssp. *pallida* (Dum.) Bég., var. *Boraeana* (Jord.) Bég. (but the earliest varietal epithet is provided by the synonym *S. apetala*, var. *minor* Rouy & Fouc.). *Ran.* 815: *S. media* (L.) Cyr., ssp. *pallida* (Dum.) Bég., var. *intermedia* (Rouy & Fouc.) Gürke. Our glabrous form of *pallida* agrees better with the original description of *Alsine glabella* Jord. & Fourr. than do the specimens distributed by Béguinot as *S. apetala*, var. *glabella* (*Fl. Ital. Exsicc.*, No. 532b). There seems little justification for maintaining *apetala* and *pallida* as independent subspecies, at least as far as the North European material goes, merely on the basis of the glabrous or hairy sepals, respectively. Béguinot's memoir is an important and valuable piece of work, but the last word on the taxonomy and status of the numerous forms included in the *Stellaria media* group has yet to be written."—H. K. Airy-Shaw. "The collecting and sending in of numerous forms in this manner for purposes of exchange is unsatisfactory. After the National Herbaria have been supplied with specimens of each reference number there is little or nothing left for distribution to individuals. At least 10 specimens of each gathering should be sent in, and when, as in this instance, different plants are included in one gathering, each reference number should be represented by 10 specimens."—J. F. G. Chapple.

Sagina apetala Ard. 23, Oxon; waste ground, Wheatley, July 22nd, 1937.—J. F. G. CHAPPLE.

Tilia platyphyllos Scop. 42, Brecon; limestone rocks, Craig Cilau, July 29th, 1937.—Coll. H. A. HYDE; comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES. "Yes; the Rev. A. Ley considered it native in the limestone woods of the Wye Valley, extending westwards into Breconshire and Radnorshire. The fruits are variable in shape and in the prominence of the ribs, which are sometimes absent. In cultivated trees the leaves vary a good deal in size and degree of pubescence."—A. B. JACKSON.

Geranium Endressi Gay, var. *Thurstonianum* Turrill. 1, W. Cornwall; Lambourne Hill. (Cultivated from root from Goonbell, W. Cornwall, 1.) July 17th, 1937. This plant remains constant in its original station at Goonbell. A form of *G. Endressi* somewhat resembling it was distributed through the B.E.C. (as *G. nodosum* L., abnormal) by Mr J. W. Long in 1935, but that had laciniate petals and does not, Dr Turrill says, come under var. *Thurstonianum*.—F. RILSTONE.

Geranium Robertianum L., var. *intermedium* Wilmott. 41, Glamorgan; shingle beach, Sully, August 1937.—Coll. A. E. WADE; comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Rhamnus Alaternus L. 10, Isle of Wight; hedge, Pan Down, Newport, May 1937. I had not previously found this plant. In Stratton's list of Isle of Wight plants, published in 1908, there is a record—"one bush of many years' growth in a hedge on Pan Down."—J. W. LONG. "A well-known Mediterranean species introduced into English gardens during the seventeenth century, or possibly earlier. A note by the late Mr Frederick Stratton in his interleaved copy of the *Flora Vectensis* states that it has long been established in a hedge on Pan Down. These specimens are, no doubt, from the same locality."—A. B. JACKSON.

Medicago italica (Mill.) Steud. 41, Glamorgan; waste ground, Pengam, Cardiff, August 1937. Coll. R. L. SMITH and A. E. WADE, and from rubbish heap, near Pengam, Cardiff, Glamorgan, 41, July 1937.—Coll. R. L. SMITH; both comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES. "Yes; better known to many botanists as *M. orbicularis* All."—J. E. LOUSLEY. "These are *M. orbicularis* All."—A. J. WILMOTT.

Melilotus indica (L.) All. 41, Glamorgan; waste ground, Splott, Cardiff, July 1937.—Coll. A. E. WADE; comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES.

Trifolium pratense L., var.? (Cornish Marl Clover.) 1, W. Cornwall; cultivated, Lambourne Hill, August 3rd, 1937. The strain of *Tri-*

folium pratense known as "Cornish Marl." This I grew as the result of a suggestion from Mr Charles Nicholson that it might prove to be a distinct variety. The seed was kindly given me by Mr T. Rowse Hosking, Secretary of the Cornish Marl Growers' Association, to whom I am indebted for the following information. The plant is highly valued by agriculturists because of its persistence and the fact that, unlike most clovers, it does not need much lime in the soil. In Sutton's experiments Cornish Marl headed the list for palatibility and nutritive qualities. The roots run to 3 ft. 6 in. deep and a two-years' growth of rootstock may be as thick as a man's thumb. In habit the plant is rosette-shaped in the early stages and the stems are normally prostrate. It is more hairy than ordinary *pratense*, especially if the season is wet. It grew wild originally in the tract of the north Cornish coast between the Camel and Gannel Rivers and the strain has been preserved by the farmers in that region. There is also a Montgomeryshire strain originally imported from Cornwall. I understand that Mr F. R. Horne, of Seale Hayne, has had the plant under observation and will describe and name it if it proves botanically distinct. The prostrate habit seems to be the leading observable characteristic. That and the neat rosettes of the young plants were most pronounced in the growth of the specimens now distributed but I do not know how far the latter may be a characteristic of *T. pratense* in general.—F. Rilstone.

Anthyllis Vulneraria L., var. *bicolor* (Rouy & Fouc.). 41, Glamorgan; Locks Common, Porthcawl, May 27th, 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales, "This is not Rouy's subvar. *bicolor* of var. *affinis* (Britt.) Rouy, which is a montane plant, but his var. *Dillenii* Schultes, i.e. the var. *coccinea* L."—A. J. Wilmott.

Lathyrus sylvestris L. 41, Glamorgan; cliffs, near Cold Knap, July 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales.

Prunus spinosa L., var. *fruticans* Weihe. (Ref. No. 2243.) 7, N. Wilts; Liddington, May 5th and August 4th, 1937. Young branches downy. No fruit formed.—J. D. Grose. "Yes, but as this is almost certainly the hybrid, *P. insititia* × *spinosa*, the name ×*P. fruticans* Weihe should be used."—R. Melville.

Prunus spinosa L., ? var. *fruticans* Weihe. (Ref. No. 2162). 7, N. Wilts; Rushey Platt, Swindon, March 26th and August 18th, 1937. Young branches glabrous; flowers usually solitary. No fruit formed.—J. D. Grose. "This is *P. cerasifera* Ehrh., the Myrobalan or Cherry Plum, often used as a plum stock and sometimes planted as a hedge around orchards."—R. Melville.

Prunus ——. (Ref. No. 2201.) 7, N. Wilts; Wansdyke, Marlborough, April 21st and August 11th, 1937. This appears to have the

downy pedicels and young branches of *P. insititia*, but the oblong fruit of *P. domestica*.—J. D. Grose. "This appears to be intermediate between *P. insititia* and *P. domestica*, and is probably a hybrid of this parentage."—R. Melville.

Rubus pistoris Bart. & Ridd. 62, N.E. Yorks; Yearsley Moor, July 29th, 1937.—C. M. Rob. "This has clear resemblances to *R. pistoris* but in the absence of my *Rubus* herbarium I cannot say that it is that species. The strigose leaves with broad terminal leaflet and the coarser more *Selmeri*-like panicle, as well as other features, appear to take it away from *pistoris*. The latter may well occur in other parts of v.-c. 62 besides Gormire."—H. J. Riddelsdell. "Yes, but *R. pistoris* is only the dwarf form of *R. Selmeri* Lindeb., and grows in close company with it at Yearsley Moor, as elsewhere. It has long been known as *R. Selmeri* Lindeb., var. *microphyllus* Lindeb. in *Hb. Rub. Scand.*, No. 34; but there is a much earlier name for *R. Selmeri*, and the correct combination will be *R. nemoralis* P. J. Muell. in *Flora*, 139 (1858), var. *microphyllus* (Lindeb.) Wm. Watson."—Wm. Watson.

Rubus furnarius Bart. & Ridd. 62, N.E. Yorks; Yearsley Moor, July 29th, 1937.—C. M. Rob. "Not *furnarius*. I think it was this form that caught my attention some years ago on Pilmoor. It is clearly related to *Lindebergii* and *furnarius*, but lacks the grey felted foliage, the very long petiole of terminal leaflet, the large flowers, and patent panicle branches of *furnarius*; nor is it so robust as most of the latter species. It is probably a new form of local occurrence and worth naming."—H. J. Riddelsdell. "Yes, but as *R. furnarius* is only a form of *R. Lindebergii* P. J. Muell.—and grows with it at Yearsley Moor—it is better to retain the older name for it. *R. Lindebergii* P. J. Muell., var. *sericeus* Aresch. in *Some Obs. on the Genus Rubus*, 145 (1885-1886)."—Wm. Watson.

Rubus Marshalli Focke & Rogers. 21, Middlesex; Park Wood, Uxbridge, August 16th. 1937.—Coll. H. Fisher; comm. Nottingham Natural History Museum. "Yes, but with very few stalked glands on stem. It is to be hoped that members will take care always to get the whole of a gathering for distribution from one bush only. Bushes which look exactly alike in the field are not necessarily all one form. Stem pieces should come from the middle of a stem, not from too high up or too low down; descriptions are taken from the middle cuttings."—H. J. Riddelsdell. "*R. Marshalli* Focke & Rogers."—Wm. Watson.

Rubus dumetorum Weihe, aggr. (Ref. No. 2523.) 19, N. Essex; Tiptree Heath, July 18th, 1937. Petals white, stamens about equalling styles; sepals reflexed in flower then loosely rising.—G. C. Brown. "Yes, *R. dumetorum* Weihe, aggr. It has features which associate it closely with several of the forms named by Rogers, but it fits none. This

is the case with most of our *dumetorum*. What is badly wanted is someone who will take up the British Caesians as a special study; it is the section of *Rubus* of which our knowledge is the most backward."—H. J. Riddelsdell. " *R. myriacanthus* Focke. See *Journ. Bot.*, 201, 1937." —Wm. Watson.

Rosa dumetorum Thuill., group *Deseglisei* W.-Dod, var. *Deseglisei* (Bor.) Christ. (Ref. Nos. R.1990 and R.1991.) 17, Surrey; Loseley, near Guildford, July 30th, 1937.—Coll. Mrs C. L. Wilde; comm. E. B. Bishop. " All are probably from the same bush but, as there is some slight doubt, the two gatherings are given separate reference numbers. Other bushes, apparently similar, occur in the hedge of the same field, and in that of an adjacent one. Named as above by Col. Wolley-Dod, from gatherings in 1928 and 1929, though the *very* scanty pubescence on upper surface of leaflets inclined me at the time to bring them under var. *incerta* (Déségl.) W.-Dod, especially as pubescence even beneath was far from dense."—E. B. Bishop. " Mr Bishop is quite correct. These leaflets are much too glabrous for var. *Deseglisei*, and the specimens must be labelled var. *incerta* (Déségl.) W.-Dod. The fruits are larger than would be normal in var. *Deseglisei*, which usually has them broadly ovoid or subglobose, but the shape as well as the size varies in both varieties, and thus are sometimes quite roundish in var. *incerta*."—A. H. Wolley-Dod.

Rosa dumetorum Thuill., group *Deseglisei* W.-Dod, var. *Deseglisei* (Bor.) Chr., f. *Rohreri* R. Kell. (Ref. Nos. R.1992 solely from one bush, and R.1993 solely from quite another bush.) 17, Surrey; Witley Common, July 19th, 1937. Several bushes are scattered over an area of about an acre. An excellent match, as Roses go, for f. *Rohreri* (see Keller's *Synopsis*, p. 547), differing but in slight unimportant details. It should be noted that Keller describes leaflets as being "large," not "very large" as stated by Wolley-Dod in *B.E.C. 1935 Rep.*, 73 (1936). Also I must admit that Keller does not state size of fruit, therefore I was wrong in describing fruit as " large " in *B.E.C. 1935 Rep.*, 902 (1936). This Rose is very distinct, especially in the field, from my " var. *Deseglisei* " of the previous paragraph. Seeing that *Rohreri* sepals are densely glandular beneath, whilst those of var. *Deseglisei* and its other formae are apparently eglandular, I am inclined to think that Keller unintentionally put *Rohreri* under var. *Deseglisei*, instead of under var. *pseudo-collina* Chr., which immediately follows.—E. B. Bishop. " Correctly named."—A. H. Wolley-Dod.

Rosa dumetorum Thuill., group *Mercicae* W.-Dod, var. *mercica* W.-Dod. (Ref. No. R.1994.) 55, Rutland; roadside verge between Exton and Uppingham, June 19th, 1937.—Coll. Mrs C. L. Wilde; comm. E. B. Bishop. " All from the same large and vigorous bush. First found by Mrs C. L. Wilde in September 1936: previously recorded from only two vice-counties. Confirmed by Col. Wolley-Dod, but with very weak

glandular peduncles, more than half being quite eglandular. Certainly this must be looked upon as a rather weak form of var. *mercica*, weak (that is) in glandular development on peduncles, fruit and sepals. But subfoliar glands (the possession of which is the distinguishing feature of group *Mercicae*) are more numerous than in the description on p. 52 of Wolley-Dod's *Revision*. By Keller this would seem to come nearest to *R. dumetorum* Thuill., var. *Simonkaiana* R. Kell. (*Synopsis*, p. 766), but again a weakly glandular form."—E. B. Bishop. "Since there are subfoliar glands as well as hispid peduncles this must go to var. *mercica*, but it is a very weak form, and is one of the borderland examples between one variety and another which shows the difficulty of segregating them in so fluid a genus."—A. H. Wolley-Dod.

Rosa dumetorum Thuill., group *Mercicae* W.-Dod, var. *seticaulis* W.-Dod. (Ref. Nos. R.1854, R.1997, and R.1998.) 32, Northants: edge of Severals Wood, Ufford, September 12th, 1936; June 28th, 1937; and September 4th, 1937. All from the same fairly large healthy bush, which is apparently of some considerable age. Confirmed by Col. Wolley-Dod, without any reservation. Previously known only from one station in Surrey, where it was discovered by Col. Wolley-Dod in 1910. A rather weak form, weak in scantiness of aciculs and glands on flowering branches below the inflorescence (the characteristic feature of var. *seticaulis*). However, subfoliar glands are quite numerous, more so than in Wolley-Dod's description, on p. 53 of his *Revision*. Every sheet sent out has at least a few glands and/or aciculs on some flowering branch, but such can usually only be found after careful search. It must always be borne in mind that these aciculs and glands become brittle with age, and are then very liable to be detached by rough weather, and perhaps even more so by handling and in transit. Consequently they are less in evidence in the later-gathered specimens. Even when aciculs and glands have become mangled or detached, their bases of attachment are often easily recognisable."—E. B. Bishop. "All correctly named, but, as the collector says, they are very weak forms. I have verified that every sheet shows at least one or two aciculs (in one specimen quite a collection of glands) close to the stipules, but on the branches. Such specimens show an affinity with plants which have been labelled *R. obtusifolia*, var. *sclerophylla*, which variety does not belong to *R. obtusifolia*, but to the *Mercicae* group of *R. dumetorum*. This will be corrected in due course."—A. H. Wolley-Dod.

Rosa tomentosa Sm., var. *pseudo-cuspidata* (Crép.) Rouy. Det. W.-Dod. Various localities in and near Goring, Oxon, 23, and Streatley, Berks, 22, September 1937.—Coll. H. J. Riddelsdell; comm. J. F. G. Chapple. "I so named this from a sheet seen in 1937, but on examination of the whole collection I am more than doubtful. The leaflets are much too glabrous and the subfoliar glands excessive but a more important feature is the presence of aciculs under the inflorescence, which, I think, will be seen on every sheet, while one or two also have

them on the stems. The specimens should be labelled *R. rubiginosa* L., var. *typica* W.-Dod, though actually not very typical and suggestive of a hybrid with some *tomentosa* variety, but this is improbable from the perfectly well-formed fruit."—A. H. Wolley-Dod. "The sheet received by me is *R. rubiginosa* L., var. *typica* W.-Dod."—E. B. Bishop.

Rosa micrantha Sm., aggr. (Ref. No. 2522.) 19, N. Essex; Tiptree Heath, July 18th, 1937. Sepals horizontally spreading, fruit shining, leaves scented.—G. C. Brown. "Though the stem armature closely resembles that of *R. micrantha*, the sheet received by me is *R. rubiginosa* L., var. *typica* W.-Dod."—E. B. Bishop. "I agree with Mr Bishop's determination that this is *R. rubiginosa* L., var. *typica* W.-Dod."—A. H. Wolley-Dod.

Rosa micrantha Sm. Det. W.-Dod. Various localities in and near Goring, Oxon, 23, and Streatley, Berks, 22, September 1937.—Coll. H. J. Riddelsdell; comm. J. F. G. Chapple. "Correctly named."—A. H. Wolley-Dod.

Pyrus latifolia L. 58, Cheshire; small tree in wood, Newton, August 28th, 1936.—C. Waterfall. "The same as distributed last year—the form of *Sorbus latifolia* Lam. commonly distributed by nurserymen; see *B.E.C. 1936 Rep.*, 401 (1937)."—J. F. G. Chapple and A. J. Wilmott.

Callitriche intermedia G. F. Hoffm. 23, Oxon; pond on Otmoor, May 4th, 1937.—J. F. G. Chapple. "Yes, showing the divaricate persistent styles of this species. In Butcher and Strudwick's *Further Illustrations* the styles are figured closely reflexed, and described as 'soon falling'—surely erroneously."—C. E. Britton.

Epilobium hirsutum × *parviflorum*. (Ref. No. 2241.) 23, Oxon; gravel-pit near Eynsham, August 23rd, 1937.—J. F. G. Chapple. "Yes, excellent specimens."—G. M. Ash.

Epilobium obscurum Schreb. 12, N. Hants; Odiham, August 29th, 1937.—G. M. Ash.

Epilobium adenocaulon Hausskn. 17, Surrey; Haslemere, October 13th, 1937.—G. M. Ash.

Astrantia major L. Cult. Shavington Avenue, Chester, C. Waterfall, ex Lane Newbold, near Richmond, N.W. Yorks, 65.—Coll. K. S. Dickinson.

Daucus Carota L. 50, Denbigh; near Old Colwyn, July 3rd, 1936.—C. Waterfall.

Galium Mollugo L. 41, Glamorgan; shingle beach, Sully, August 1937.—Coll. A. E. WADE; comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES. "Intermediate between var. *genuinum* H. Br. and var. *pubescens* Schrader."—A. E. WADE. "I agree that this estimate of the whole gathering is correct."—C. E. BRITTON.

Galium Mollugo L., var. *genuinum* H. Br. 41, Glamorgan; bushy place on the cliffs near Cold Knap, Barry, July 1937.—Coll. A. E. WADE; comm. DEPARTMENT OF BOTANY, NATIONAL MUSEUM OF WALES. "A very fine gathering of this variety, each sheet displaying ample material."—C. E. BRITTON.

Erigeron canadensis L. (Ref. No. 2702.) 7, N. Wilts; sandy field, Okus, Swindon, July 20th, 1937. Not previously recorded for this vice-county. The plants were uniformly small.—J. D. GROSE. "Not an N.C.R.; for a previous record for v.-c. 7 see *B.E.C. 1932 Rep.*, 103 (1933)."—J. F. G. CHAPPLE.

Erigeron canadensis L. 56, Notts; canal-side, Lenton, August 1st, 1937.—Coll. R. BULLEY; comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Ambrosia artemisifolia L. (Ref. No. 2916.) 7, N. Wilts; Broughton Common, September 1st, 1937. Found by Miss Gullick in 1933 and increasing yearly despite cutting.—J. D. GROSE.

Galinsoga parviflora Cav. 56, Notts; canal-side, Lenton, August 31st, 1937.—Coll. R. BULLEY; comm. NOTTINGHAM NATURAL HISTORY MUSEUM.

Senecio vulgaris L., var. *erectus* Trow (*radiatus* Koch). 11, S. Hants; broken ground, 'Bus Terminus, Bournemouth, September 20th, 1937. The Director, Royal Botanic Gardens, Kew, kindly had this plant named for me. He remarked that it was "not quite the extreme glabrous plant" and gave the reference "see Trow in *Journ. Genetics*, *2*, 239 (1912)."—J. W. LONG.

Cnicus tuberosus Roth. 10, Isle of Wight; garden, Newport, August 1936.—J. W. LONG. "Mr Long tells me that the origin of this Thistle was from near Devizes, Wilts. I think it is important that the origin of cultivated specimens should be stated on the label."—J. F. G. CHAPPLE.

Cirsium arvense (L.) Scop., var. *mite* Koch. (Ref. No. 3471.) 9, Dorset; farm-yard near Wool, July 12th, 1937.—J. F. G. CHAPPLE. "I regard this as a typical form of the alien species *Cirsium setosum* (Besser) M. Bieb. The lobing of the stem-leaves agrees with the description in *Flora Taurico-Caucasica* (1819). What *C. arvense*, var. *mite* really is, appears problematical."—C. E. BRITTON. "Wimmer and Grabowski are

the authorities for this varietal name, not Koch. The latter described it (*Syn. Fl. Germ. et Helv.*, ed. i, 400, 1837) in words practically identical with those of Wimmer and Grabowski (*Fl. Silesiae*, *2*, 92, 1829) whose description runs ' Foliis caulinis sinuato-pinnatifidis subundulatis, rameis subintegris vel dentatis, mitius spinosis.' With this description the present gathering is in agreement."—W. A. Sledge.

Centaurea nigra L. = *C. obscura* Jord. 1, W. Cornwall; field-border, Lambourne Hill, Perranzabuloe, August 10th, 1937. This form, a dwarf, spreading, semi-prostrate plant, is common in West Cornwall, and flowers a fortnight earlier than the tall, erect forms (*C. nemoralis*). The flowering heads are large and dark-coloured, in contrast to the smaller, lighter-coloured heads of the latter forms. It is, I think, f. *elongata* C. E. Britton. On August 10th, when these specimens were gathered, the plants were going out of flower; the first fully-opened flower-head was noted on July 10th. Not till the end of the month were the tall plants in flower.—F. Rilstone. " A splendid set of specimens admirably representative of *C. obscura* Jord. and belonging to my forma *elongata*, as Mr Rilstone suggests. Such plants clearly bring out the distinctions between this species and the more common *C. nemoralis* Jord."—C. E. Britton.

Centaurea paniculata L., var. 41, Glamorgan; waste ground, Splott, Cardiff, August 16th, 1937.—Coll. A. E. Wade and R. L. Smith; comm. Department of Botany, National Museum of Wales. " As Rouy recognises under *C. paniculata* L. eight subspecies, two " formes," seventeen varieties, one subvaricty and six hybrids, it will be seen that the difficulty in establishing the exact identity of the ' var.' distributed is great."—C. E. Britton.

Crepis taraxacifolia Thuill. 50, Denbigh; near Rhos-on-Sea, June and July 1937.—C. Waterfall.

Taraxacum lissocarpum Dahlst. Det. G. Haglund. (Ref. No. 1940.) 23, Oxon; Otmoor, May 4th, 1937.—J. F. G. Chapple.

Lactuca Serriola L., ? var. *dubia* Jordan. (Ref. No. 2233.) 23, Oxon; waste ground, Oxford, August 20th, 1937. Not from the same locality as the plant collected by Lady Douie and named var. *dubia* Jord. by J. E. Lousley (see *B.E.C. 1936 Rep.*, 265 (1937)), but from another station about a mile distant. The label should read var. *dubia* (Jordan) Rouy—Jordan having described it as a species.—J. F. G. Chapple. " Undoubtedly the plant described by Jordan in *Pugillus Plantarum Novarum*, 119, 1852, as *Lactuca dubia*. It matches a specimen in Herb. Mus. Brit. gathered by Jordan labelled ' Lyon à Villenbaume, 20 août, 1853,' as *L. scariola integrifolia* auct. gall.—a synonym quoted by Jordan in his *Pugillus*."—J. E. Lousley.

Lactuca alpina Hook. f. 58, Cheshire; garden ground, Shavington Avenue, near Chester, July and August 1933-1936.—C. WATERFALL. "This is the Caucasian species *Lactuca macrophylla* A. Gray."—J. F. G. CHAPPLE.

Limonium binervosum (G. E. Smith) C. E. Salmon forma. (Ref. No. P.369.) 45, Pembroke; Bullslaughter Bay, August 4th, 1937.—J. F. G. CHAPPLE. "A small, slender form of this species, mostly with very narrow foliage recalling *L. transwallianum* Pugsley, from which it differs by its more spathulate and more strongly mucronate leaves, larger spikes of flowers and much larger and broader corollas."—H. W. PUGSLEY.

Limonium binervosum (G. E. Smith) C. E. Salmon forma. (Ref. No. P.370.) 45, Pembroke; Bullslaughter Bay, August 5th, 1937.—J. F. G. CHAPPLE. "Another dwarf form of *L. binervosum*, distinct from P.369, with broad foliage, and contracted spikes of large spikelets."—H. W. PUGSLEY.

Limonium binervosum (G. E. Smith) C. E. Salmon forma. (Ref. No. P.378.) 45, Pembroke; limestone crevices, Saddle Point, August 7th, 1937.—J. F. G. CHAPPLE. "An extremely dwarf form of this species, probably due to a very dry habitat. It would be interesting to test this plant by cultivation."—H. W. PUGSLEY.

Solanum nigrum L., var. *ochroleucum* (Bast.). 58, Cheshire; roadside, Kilmorey Park Avenue, Chester, September 25th, 1937.—C. WATERFALL.

Euphrasia montana Jordan. (Ref. No. 25.) 64, Mid-west Yorks; Tarn Moss, Malham, June 30th, 1937.—W. A. SLEDGE. "Excellent specimens of *E. montana* Jord."—H. W. PUGSLEY.

Rhinanthus stenophyllus Schur. (Ref. No. 3062.) 8, S. Wilts; chalk down, Ham Hill, July 25th, 1937.—E. C. WALLACE.

Melampyrum pratense L., var. *lanceolatum* Schur. Det. C. E. Britton. (Ref. No. 1987.) 12, N. Hants; near Eversley, May 30th, 1937.—P. M. HALL.

Orobanche purpurea Jacq. (Ref. No. 2333.) Braye Bay, Alderney. Channel Isles. On Yarrow. June 10th, 1937. The fifth sepal is strongly developed in several plants; in others it is scarcely discernible.—J. D. GROSE.

×*Mentha Mulleriana* F. Schultz, var. *serratifolia* Pugsley. Cultivated in garden at Wallington, Surrey, by A. L. Still from a cutting given by Mr Pugsley. September 1937.—Comm. E. C. WALLACE. "This plant unfortunately grew very gross in the garden and most of the speci-

mens are side shoots. In a dry spot these would be short and crowded with whorls, with small bracts. But the specimens show the characteristic leaf-shape and flowering parts."—A. L. Still.

Mentha longifolia Huds. × *rotundifolia* Huds., var. *sapida* (Tausch) Briq. 90, Angus; by a stream, Glamis, August 19th, 1937.—Coll. R. H. Corstorphine and A. L. Still; comm. E. C. Wallace. "Among Malinvaud's Exsiccata there is a sheet labelled as above, but not at all like the Glamis plant. Another sheet which closely resembles the latter is labelled *M. caerulescens* Opiz. Topitz' description of var. *sapida* fits Malinvaud's sheet, but he gives a f. *leptodentata* Top. which appears to agree with the Glamis plant."—A. L. Still.

Mentha ? longifolia (L.) Huds. (Ref. No. 2232.) 23, Oxon; established on the edge of a "tip," Oxford, August 20th, 1937.—J. F. G. Chapple. "This must come under *nemorosa*; the signs of a *rotundifolia* cross are not apparent; the leaves are papery and very slightly reticulate; and the spikes are slender and interrupted. See *B.E.C. 1935 Rep.*, 795 (1936), for Trautmann's opinion."—A. L. Still.

×*Mentha crispa* (L.) Fraser. Cultivated at Wallington, Surrey, by A. L. Still, August 1937, from a root from Carlisle.—Comm. E. C. Wallace. "Sole says, on a sheet of this, 'Danish Curled Mint, an Exotic.' It is old in cultivation and no doubt an escape in the few localities recorded in Britain. There are two sheets labelled *M. crispa* in the Linnean Herbarium. The second is marked '*sibirica*.' The ancients called any Mint with rugose leaves *crispa*. The second Mint looks like a *rotundifolia-arvensis* cross (*M. carinthiaca* (Host) Briq.)." —A. L. Still.

Mentha piperita L. (Ref. No. 37.1227.) 3, S. Devon; ditch by road-side, Ivybridge-Cornwood Road, September 24th, 1937.—N. D. Simpson. "I should call this var. *subcordata* Fraser. I have several specimens like this, mostly from the West. The leaves are slightly cuneate at the base in many cases, but otherwise I cannot match it with any of my *officinalis*. The nearest I have is a plant from Holmwood Common, distributed by Mr E. C. Wallace, which Mr Fraser passed as *subcordata*. In this variety the serratures are usually more numerous, smaller and less finely pointed than in *officinalis*. The 'Mitcham' Mint differs slightly from this Ivybridge form."—A. L. Still.

×*Mentha piperita* L., var. *officinalis* (Sole), lusus *pilosus*. Cultivated at Wallington, Surrey, August 1937, by A. L. Still. Origin, Weston-in-Gordano, N. Somerset, 6.—Comm. E. C. Wallace. "=*M. hircina* Hull, var. *hirsuta* Fraser."—A. L. Still.

Mentha aquatica L. × *spicata* L. Runners of the "Roydon Mint." cultivated at Sutton, Surrey, September 1937.—E. C. Wallace. "I have had these stolons 5 feet long in the garden."—A. L. Still.

×*Mentha verticillata* L., var. *trichoides* Briq. 41, Glamorgan; Parkmill, Gower, September 1st, 1937.—Coll. A. L. Still; comm. E. C. Wallace. "See *B.E.C. 1934 Rep.*, 796 (1935). There is some doubt about the position of this Mint. Although Briquet marked Druce's Hereford plant as stated above, I cannot find any reference to this name in his writings. But in *Fragmenta Mon. Lab.* (Herb. Boissier, 1894) he describes *M. dalmatica* Tausch, var. *trichoides* Briq. from Croatia. Our plant has the general facies of *M. dalmatica* Tausch, which is the hybrid *longifolia* × *arvensis*, and Mr Fraser agreed with me that it showed signs of a spicate parent; but there is no record of *M. longifolia* in Gower. In the Bishopston Valley it is closely associated with *M. gentilis* L., var. *vesana* Lej. & Court and is difficult to distinguish from this at sight. I have not seen the latter at Parkmill, but there is a form of *gentilis* somewhere there which has so far eluded me. I am inclined to suspect 'sporting.' "—A. L. Still.

×*Mentha gentilis* L., var. *vesana* Lej. & Court. 41, Glamorgan; Bishopston Valley, Gower, September 3rd, 1937.—Coll. A. L. Still; comm. E. C. Wallace. "See *B.E.C. 1935 Rep.*, 108 (1936)."—A. L. Still.

×*Mentha gentilis* L. Cultivated at Wallington, Surrey. Origin, river bank, Symond's Yat, W. Gloucester, 34.—Coll. August 1937 by A. L. Still; comm. E. C. Wallace. "Not the same plant as that distributed last year from the same locality."—E. C. Wallace. "This plant has been cut down and the stolons were taken at random. In the garden it was a spreading decumbent plant, profusely branched. It is abnormal in having triangular calyx teeth and hairs in the throat of the corolla, both *arvensis* characters. But the habit of the plant is that of *gentilis*, and Dr Metcalf was not prepared to say that this name was incorrect. A similar plant was sent me from the Wye above Hereford by Mr M. L. Williams."—A. L. Still.

Lycopus europaeus L. 58, Cheshire: Upton Gorse near Chester, August 11th, 1937.—C. Waterfall.

Lycopus europaeus L., var. *dissectus* With. 100, Arran: at sea-level, Lamlash, August 11th, 1937.—Coll. R. Mackechnie; comm. E. C. Wallace. "This plant is much more hairy than the usual plant of southern England and could be called var. *pubescens* Benth. The leaves of subglabrous plants are often much dissected near their bases."—E. C. Wallace. "The variations of this species may be classified as follows:—(1) Glabrescent or pubescent; (2) leaves dissected or sinuate-dentate; (3) leaf segments acuminate or obtuse. Possible combinations of the three pairs of characters give a possibility of twelve varietal names, and although there is some co-relation between the second and third groups, a considerable number of the theoretical variations occur in nature. For an example of the complications which result see *B.E.C. 1918 Rep.*, 298-299 (1919). Until we are prepared to use formulae to

describe such unlinked variations, it seems preferable to refer to them in short descriptive phrases rather than to attempt to apply varietal names. I should label Mr Mackechnie's plant 'a pubescent form with dissected leaves,' which indicates that it would probably fall under both var. *pubescens* Bentham and var. *dissectus* Withering and obviates the necessity of searching for type specimens of these authors."—J. E. Lousley.

Prunella laciniata L. (Ref. No. 2019.) 12, North Hampshire; old camp site near Shipton Bellinger, June 20th, 1937. See note on p. 498.—P. M. Hall.

Prunella laciniata L. × *vulgaris* L. (Ref. No. 2020.) 12, North Hampshire; old camp site near Shipton Bellinger, June 20th, 1937. With both parents; flower-heads larger than in *P. vulgaris* and variable in colour; extent of toothing of leaves also variable.—P. M. Hall.

Lamium moluccellifolium Fr.? (Ref. Nos. Lab. 501, 502, 503.) 32, Northamptonshire; (1) Top of wall at Lolham, Maxey, June 12th, 1937. —Coll. Mrs C. L. Wilde. (2) Cornfield by Ermine Street, Walcot, June 21st, 1937.—Coll. E. B. Bishop. (3) Top of wall at Ufford. June 21st, 1937.—Coll. E. B. Bishop. All comm. E. B. Bishop. "I think correct, but had not previously met with this northern species. If correct, seemingly N.C.R. for v.-c. 32, though it is recorded for v.-c. 31, which is yet further south."—E. B. Bishop. "All undoubted *L. amplexicaule*. The rarer species may easily be distinguished by the much longer, spreading, less hirsute calyx teeth, and the rapid decrease in the size of the bracts towards the apex of the stem. Once the two species have been seen in the field they are unlikely to be confused again."—J. E. Lousley. "Certainly not *L. moluccellifolium* Fr. It appears to be the cleistogamous form of *L. amplexicaule* L."—A. J. Wilmott.

Plantago lanceolata L., var. *anthoviridis* W. Watson (the extreme form). 1, W. Cornwall; Lambourne Hill, Perranzabuloe, May 3rd, 1937. The variety seems to have a slightly earlier flowering season than the typical plant. Here the first flowers seen in 1937 (on April 12th) were *anthoviridis*. Ordinary *lanceolata* appeared a day or two later. Then for a few days both forms were about equally numerous but before long the spikes of the variety were far outnumbered by those of the typical form. The main flowering season of *anthoviridis* is, I think, shorter than that of typical *lanceolata*. Davey in *Flora of Cornwall* gives the flowering season of *P. lanceolata* as April to September; Hooker (*Stud. Fl.*) says May to October, and Babington (*Manual*) May to July. In Cornwall, at any rate, all *lanceolata* forms appear to have two flowering seasons, the main burst of blossom in spring and early summer being followed by a "thin" period and then a second flowering period in early autumn.—F. Rilstone. "Agrees with the type of this variety."—E. G. Baker.

Chenopodium leptophyllum (Nutt.) Brit. & Br. 10, Isle of Wight; waste land, Cowes, August 1937.—J. W. Long. "Yes, this appears to match specimens which Aellen has named for me as *C. pratericola* Rydberg, var. *Thellungianum* Aellen (=*C. leptophyllum* auct.—non Moq., non Nutt.)."—J. E. Lousley.

Chenopodium polyspermum L. (Ref. No. 2933.) 7, N. Wilts; Okus Quarry, Swindon, September 2nd, 1937. Specimens taken from two erect plants, one with rather narrower leaves than the other.—J. D. Grose.

Chenopodium polyspermum L., ? var. *cymosum* Moq. (Ref. No. 2929.) 7, N. Wilts; Okus Quarry, Swindon, September 2nd, 1937. All specimens taken from one procumbent plant, about six feet in diameter, with over a hundred fruiting spikes. Elsewhere in Wiltshire, I have seen plants with similar leaves and inflorescence measuring, in the fruiting stage, only three or four inches.—J. D. Grose.

Chenopodium polyspermum L., var. *acutifolium* (Sm.) Gaudin. 41, Glamorgan; waste ground, Newport Road, Cardiff, September 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales.

Note.—The genus *Salicornia* is under revision and the sending in of dried specimens is useless at the moment.

Salicornia ramosissima Woods, small form. (Ref. No. 2524.) 19, N. Essex; dry ground away from tide, Langenhoe, September 12th, 1937. Central stem erect, branches spreading, all deep red, a perfectly detached colony where water cannot penetrate.—G. C. Brown. "Two forms, both of which probably come under *S. ramosissima* of the Cambridge British Flora."—A. J. Wilmott.

Salicornia disarticulata Moss ? (Ref. No. 2525.) 19, N. Essex; [Ray Channel] Saltings, Mersea Island, September 12th, 1937. Plant green, stems mostly erect, spikelets disarticulating easily. With *S. stricta*, but very distinct in size and habit.—G. C. Brown. "*Salicornia disarticulata* Moss."—A. J. Wilmott.

Polygonum Convolvulus L., var. *subalatum* DC. 56, Notts; canal side, Lenton, August 1st, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum. "Correct. Not a critical plant. The distribution of this as compared with the usual form of the species is not very well known."—C. E. Britton.

Polygonum ——. 56, Notts; canal side, Lenton, August 1st, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum. "Not very good material. The species, however, is *P. Persicaria* L. and is an unusual form with the ripe fruits exceeding the perianth. I cannot discern an admixture with a second species."—C. E. Britton.

Polygonum Raii Bab. (Ref. No. P.375.) 45, Pembroke; Manorbier, August 4th, 1937.—J. F. G. Chapple.

Polygonum Bellardi All. 10, Isle of Wight; river side, Newport, October 1936.—J. W. Long. "The application of Allioni's name is extremely doubtful, but the present gathering does not represent the plant to which it has been referred in most recent Continental floras. The spreading habit, dingy ochreae, and small fruits (circa 1.75 mm. long) show that Mr Long's plant is *P. pulchellum* Lois."—J. E. Lousley.

Euphorbia virgata W. & K., var. *esulifolia* Thell. 11, S. Hants; between Owslebury and Baybridge, May 27th, 1937 (Ref. No. 1998.), and June 12th, 1937 (Ref. No. 1998 A).—P. M. Hall. "Not the f. *esulifolia* Thell."—A. J. Wilmott.

Euphorbia virgata W. & K., ? f. *esulifolia* Thell. (Ref. No. 2657.) 8, S. Wilts; Larkhill, July 14th, 1937. Like the plant distributed last year by Mr Foster, this grew in abundance in a military camp.—J. D. Grose. "One of the forms so named. This and Mr Hall's Owslebury plant are different extremes of what is included under *E. virgata* W. & K., but there seem to be several forms and ripe seeds are required before they can be satisfactorily studied."—A. J. Wilmott.

Ulmus nitens Moench. (Ref. No. 3777.) (Foliage only; mature and epicormic.) 32, Northants; roadside, Silverstone, June 7th, 1937.—J. F. G. Chapple and R. Melville. "This Elm is very similar in leaf shape to my conception of 'pure' *U. nitens* Moench. Compare subdistal leaves of the short shoots of normal branches with the figure given in *Ann. Bot.*, n.s., *1* (4), 1937, p. 674. The leaves differ in having comparatively few glandular hairs and numerous short simple hairs on the lower surface, whereas the reverse should be the case. Note the differences in shape of the leaves of epicormic shoots as compared with those of normal shoots, the scarcity of glandular hairs and the increased numbers and length of the simple hairs."—R. Melville. "This is *Ulmus nitens* Moench as I understand it but the leaves are not fully developed and should have been collected later in the season. The collectors have, however, wisely included epicormic shoots which, as usual, show the upper surfaces scabrid."—A. B. Jackson.

Vallisneria spiralis L. 59, S. Lancs; Reddish Canal, July 1937.—Coll. Miss E. S. Todd; comm. J. F. G. Chapple. "Exceedingly interesting and beautiful specimens. This species is characteristic of warm climates in the New and Old Worlds, but has extended into colder waters in France, Japan, Canada and elsewhere. On the continent it has been observed in thermal waters and warm effluents, and it would be interesting to know if the locality in the Reddish Canal is close to a warm discharge from a factory."—J. E. Lousley. "*Vallisneria spiralis* appears to have been first discovered in Britain in this locality by C. Bailey in 1908. (See *B.E.C. 1908 Rep.*, 338 (1909), and *B.E.C. 1924*

Rep., 533 (1925).) The water of the canal at Reddish is raised to an abnormal temperature—sometimes up to 90° F. (Bailey, *Journ. Bot.*, 328, 1884)—by the discharge of hot water from adjacent mills. The other plants associated with *V. spiralis* in the Reddish Canal are *Chara Braunii* and *Naias graminea*, and C. Bailey in his account of the latter species in *Journ. Bot.*, 305-333, 1884, puts forward the theory that *Naias graminea* may have been introduced to the local mills with cotton from Egypt. Groves and Bullock-Webster (*British Charophyta*, 2, 13) think it probable, too, that *Chara Braunii* may have been introduced from Egypt by the same means. But the introduction of *Vallisneria spiralis* cannot be ascribed to the same source as I am unable to find that it occurs in Egypt—it is not mentioned in Muschler's *Manual Flora of Egypt*."—J. F. G. Chapple.

Sisyrinchium angustifolium Mill. 10, Isle of Wight; garden, Newport, September 1936.—J. W. Long. [Origin unknown.]

Juncus compressus Jacq. (Ref. No. 28.) 64, West Yorks; Newton in Fairburn, July 21st, 1937.—W. A. Sledge.

Lemna polyrrhiza L. 56, Notts; canal, Lenton, July and August, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum.

Wolffia arrhiza Wimm. 17, Surrey; pond on Burgh Heath, September 10th, 1937. The surface of the water of the small pond was completely covered with the *Wolffia* at this date. By mid-October very little was to be seen on the surface but quite a number of fronds could be seen on the bottom of the pond, about one foot below the surface. A month later conditions were much the same even with ice on the pond. Many of the fronds in September were budding laterally, but by October all the off-shoots appeared to have been shed."—E. C. Wallace.

Potamogeton alpinus Balb. 62, North East Yorks; Preserve Pond, Castle Howard, July 27th, 1937.—C. M. Rob. "Correctly named."—J. E. Dandy.

Potamogeton rutilus Wolfgang. (Ref. No. 5045.) 111, Orkney; in about 2½ feet of water, Loch of Ayre, St Mary's Village, Holm, Mainland, August 28th, 1937.—H. H. Johnston. "This is the true *P. pusillus* L. (*P. panormitanus* Biv.), see *Journ. Bot.*, 76, 89-92, 1938."—J. E. Dandy.

Zostera marina L. (Ref. No. 37.1207.) 11, S. Hants; in deep mud in a water hole near a bunny, Pennington Marshes, September 7th, 1937.—N. D. Simpson. "Correctly named, but the leaves are rather narrower than are quite typical, even on flowering shoots. The leaves on vegetative shoots are always broader than those on fertile ones."—T. G. Tutin.

Zostera Hornemanniana Tutin. (Ref. No. 37.1209.) 9, Dorset; in sandy mud, Bramble Bay, near S. Haven, Poole Harbour, September 8th, 1937.—N. D. Simpson. "Correctly named."—T. G. Tutin.

Zostera nana Roth. (Ref. No. 37.1208.) 9, Dorset; in sandy mud, Bramble Bay, near S. Haven, Poole Harbour, September 8th, 1937.—N. D. Simpson. "Correctly named."—T. G. Tutin.

[*Eriophorum alpinum* L. (Ref. No. 30.) Switzerland, Stazersee, near St Moritz, August 17th, 1937.—W. A. Sledge.]

Carex Pseudo-cyperus L. (Ref. No. 2620.) 7, N. Wilts; near Clyffe Pypard Pond, July 8th, 1937.—J. D. Grose.

Carex vesicaria L. (Ref. No. 919.) 39, Staffs; Trentham Park, June 16th, 1937.—E. S. Edees. "Yes, typical specimens."—E. Nelmes.

Carex inflata Huds. (Ref. No. 920.) 39, Staffs; Trentham Park, June 16th, 1937.—E. S. Edees. "Yes."—E. Nelmes. "A most interesting form with leaves up to 9 mm. broad, not inrolled, and female spikes 65 × 10 mm. Very similar to the plant gathered by Dr Praeger, labelled 'Drain, Mullaghmore Lough, Co. Armagh, Ireland, 8th June 1893,' which was first referred in error to *C. rhynchophysa* C. A. Meyer. Both gatherings are best under Ascherson's *C. rostrata*, var. *latifolia*, *Fl. Brandenb.*, *1*, 792 (1864)."—J. E. Lousley.

Carex strigosa Huds. 12, N. Hants; wood on clay, Empshott, June 6th, 1937.—E. C. Wallace. "Yes."—E. Nelmes.

Carex helodes Link. (Ref. No. 918.) 39, Staffs; Consall, July 3rd, 1937.—E. S. Edees. "Yes."—E. Nelmes and J. E. Lousley.

Carex extensa Good. 3, S. Devon; side of river Tamar, Bere Ferrers, June 26th, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum. "Yes."—E. Nelmes.

Carex panicea L., ? var. *tumidula* Laest. (Ref. No. 1987.) 23, Oxon; Otmoor, May 25th and June 6th, 1937.—J. F. G. Chapple. "Two forms appear to be represented here—f. *tumidula* Laest. and f. *robusta* Warnstorf (elongated yellow fruits)."—E. Nelmes. "Plants similar to this gathering are frequent in fens and bogs in many parts of England, and in my opinion are merely forms due to their habitat. They have sometimes been referred to var. *tumidula* Laest., but specimens so named in Herb. Bennett (in Herb. Mus. Brit.) from Colonsay, v.-c. 102, exhibit the characters attributed to the variety in an extremely marked degree and differ more from the present gathering than this differs from the normal British plant. Unless a type specimen of Laestadius' plant can be produced I suggest that the name *tumidula* should be restricted to extreme examples such as those from Colonsay."—J. E. Lousley.

Carex Goodenowii Gay. (Ref. No. 921.) 39, Staffs; Rudyard Lake, June 26th, 1937.—E. S. Edees. "Yes."—E. Nelmes. "Yes, a not unusual lakeside form with the upper female spikes terminating in a few male flowers."—J. E. Lousley.

Carex Goodenowii Gay. 62, N.E. Yorks; Pilmoor, July 25th, 1937.—C. M. Rob. "There is an almost identical plant in Marshall's Herbarium which Kükenthal identified as 'forma monstrosa' (No. 2384, W. Sutherland, 1900). Ar. Bennett's comment was 'Very odd. But for the distinctly ribbed fruits one might have thought *caespitosa*'."—E. Nelmes. "I was with Miss Rob when this was gathered and have no hesitation in describing the sedge as the most distinct and uniform variant of the polymorphic *C. Goodenowii* that I have ever seen in the field. Most of the variations of this species run into one another so much when a large enough series is examined that in the present state of our knowledge it is impossible to do more than select occasional extreme variants on which to confer names. The present gathering may be named *C. Goodenowii* Gay, var. *elatior* Lang, sub-var. *angustifolia* (Kük.) (*Allg. bot. Zeit.*, 3, 1888), forma *subovalis* (Kneucker) and matches Kneucker, *Exsicc. 9*, 1901, No. 263. Notes on whether the variation persists in this locality will be very welcome."—J. E. Lousley. "There is a specimen of *C. Goodenowii* in Herb. Druce from the New Forest, Brockenhurst (coll. B. King, 1919), which exhibits the same features as Miss Rob's plant, except that it is very stunted (16 cm. high) and has a 'starved' look. In an accompanying note, the collector says 'the forest is very dried up.' Another specimen with 'fertile spikes reduced' from Littlesea, Dorset, collected in the same dry summer (1919)—after six weeks' drought—by the Rev. H. J. Riddelsdell and distributed through the B.E.C. (see *B.E.C. 1919 Rep.*, 843 (1920)), makes some approach to Miss Rob's plant, but the fertile spikes are not nearly so contracted. Observation should be kept on the plant at Pilmoor to see whether this character is due to climatic conditions."—J. F. G. Chapple.

Carex remota L. 3, S. Devon; side of river Tamar, Bere Ferrers, June 26th, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum. "Yes."—E. Nelmes.

Carex ——. 62, N.E. Yorks; roadside, Terrington Carr, July 29th, 1937.—C. M. Rob. "*C. paniculata* × *remota*—a form of the hybrid not coming under ×*C. Boenninghauseniana* (Weihe)."—J. E. Lousley. "Miss Rob's plant appears to me to be an extreme shade form of *C. disticha* Huds."—E. Nelmes.

Carex disticha Hudson. (Ref. No. 29.) 64, W. Yorks; Newton near Fairburn, July 21st, 1937. Sent partly for comparison with Ref. No. 26, and partly on account of the unusually well-formed fruit.—W. A. Sledge. "Yes."—E. Nelmes.

Carex disticha Huds., var. *longibracteata* (Schleich. ex Druce). (Ref. No. 26.) 64, M.W. Yorks; Tarn Moss, Malham, June 30th, 1937. A form rather than a variety which here produced every intermediate state down to the typical short-bracted type. But some of the specimens now distributed are extreme examples of the form with bracts often reaching a length of 7 inches. For a note on the varietal name, which appears to be a nomen nudum, see *Journ. Bot.*, *35*, 145, 1897. —W. A. Sledge. "Yes, extreme examples of a form which occurs rather frequently."—E. Nelmes. "An extremely interesting luxuriant form of *C. intermedia* Good. For reasons for rejecting Hudson's name see C. B. Clarke in *Journ. Linn. Soc.*, *36*, 291, 1903. Long-bracted forms of this species are not infrequent, and it seems scarcely worth while adopting Schleicher's name which Britten has shown to be invalid (*Journ. Bot.*, 1897, 145)."—J. E. Lousley.

Carex incurva Lightf., var. *erecta* Lang. (Ref. No. 27.) 90, Forfar (Angus); Fishtown-of-Usan, July 14th, 1937.—W. A. Sledge. "Dr Sledge's excellent material matches a sheet in Herb. Mus. Brit. collected by O. F. Lang as his variety, and also agrees with the author's original description 'Culmo stricte erecto 4-8 pollices alto' (*Linnaea*, *24*, 507, 1851)."—J. E. Lousley. "This plant is one of the components of a very variable species, with forms and varieties in Europe, Asia, and N. and S. America. The chief European forms appear to be as follows:—(1) A comparatively tall, robust plant, with erect or nearly erect stems; occurring in Norway and probably in Scotland (*C. maritima* Gunn., 1772; *C. incurva* Lightf., var. *erecta* O. F. Lang, 1851; var. *pratensis* Hartm., 1854); (2) a smaller plant with usually curved stems, found in Scotland, N. England, Norway, etc. (*C. incurva* Lightf., 1777); and (3) a short, straight-stemmed plant from Switzerland, Austria, etc. (*C. juncifolia* All., 1785). Dr Sledge's specimens appear to be too slender for typical *C. maritima* Gunn. They differ considerably from Marshall's 2364, which Kükenthal cites under Lang's var. *erecta*. The name *C. maritima* Gunn. was omitted from the *Index Kewensis*."—E. Nelmes.

Panicum Crus-galli L., var. *brevisetum* Döll. 41, Glamorgan; waste ground, Pengam, Cardiff, June 1937.—Coll. A. E. Wade and R. L. Smith; comm. Department of Botany, National Museum of Wales. "*Echinochloa crus-galli* (L.) Beauv., var. *mitis* (Pursh) Peterm."—C. E. Hubbard.

Setaria viridis (L.) Beauv., var. *major* (Gaud.) Pospichal. 41, Glamorgan; waste ground, Newport Road, Cardiff, October 1937.—Coll. A. E. Wade and R. L. Smith; comm. Department of Botany, National Museum of Wales. "*Setaria viridis* (L.) Beauv., var. *major* (Gaud.) Koch."—C. E. Hubbard.

Setaria viridis (L.) Beauv., var. *major* (Gaud.) Koch. 41, Glamorgan; waste ground, Newport Road, Cardiff, September 1937.—Coll. R. L. Smith; comm. Department of Botany, National Museum of Wales. "*Setaria viridis* (L.) Beauv., var. *major* (Gaud.) Koch."—C. E. Hubbard.

Setaria viridis (L.) Beauv., var. *major* (Gaud.) Koch. Awns varying from green to purple. 41, Glamorgan; waste ground, Penarth Road, Cardiff, September 1937.—Coll. R. L. Smith; comm. Department of Botany, National Museum of Wales. "*Setaria viridis* (L.) Beauv., var. *major* (Gaud.) Koch."—C. E. Hubbard.

Setaria verticillata (L.) Beauv. 6. N. Somerset; garden weed near Clevedon, August 1937.—Coll. R. L. Smith and Mrs C. I. Sandwith; comm. Department of Botany, National Museum of Wales. "*Setaria verticillata* (L.) Beauv."—C. E. Hubbard.

Phleum nodosum L. (Ref. No. 2273.) 20, Herts; Wilbury Hill, August 31st, 1937.—P. M. Hall. "*Phleum nodosum* L."—C. E. Hubbard.

Phleum pratense L., var. *intermedium*? 56, Notts; Colwick, July 6th, 1937.—Coll. R. Bulley; comm. Nottingham Natural History Museum. "*Phleum nodosum* L."—C. E. Hubbard.

Agrostis stolonifera L. 1, W. Cornwall; Lambourne Hill (growing with bush fruit), August 17th and September 14th, 1937. "Ad var. *giganteam* vergens" was Dr Stapf's comment some years ago on a similar gathering from the same enclosure.—F. Rilstone. "*Agrostis gigantea* Roth."—C. E. Hubbard.

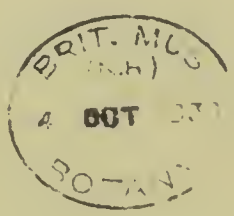
Cynosurus cristatus L. Large-spiked form. 41, Glamorgan; waste ground, Pengam, Cardiff, June 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales. "*Cynosurus cristatus* L."—C. E. Hubbard.

Cynosurus cristatus L. Small-spiked form. 41, Glamorgan; waste ground, Pengam, Cardiff, June 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales. "*Cynosurus cristatus*."—C. E. Hubbard.

Festuca rigida (L.) Kunth, var. Guernsey; near Fort Doyle. Cultivated in Lady Davy's garden, West Byfleet, Surrey, June 2nd, 1937. Lady Davy collected this plant in, I believe, 1926 near Fort Doyle, and it has grown abundantly at Byfleet ever since. In 1936 I found the same variety near St Peter's Port, about five miles from the first station.—C. M. Rob. "*Scleropoa rigida* Griseb., var. *patens* Coss & Dur."—C. E. Hubbard.

Bromus maximus Desf. 41, Glamorgan; roadside near Newport Road, Cardiff, June 1937.—Coll. A. E. Wade; comm. Department of Botany, National Museum of Wales. "*Bromus Gussonei* Parl."—C. E. Hubbard.

Bromus carinatus Hook. & Arn. (Ref. No. 4937.) 23, Oxon; established on waste-ground by the Cherwell, Oxford, September 6th, 1937.—J. F. G. Chapple. "*Bromus laciniatus* Beal. (*B. pendulinus* Sessé). Occasionally cultivated as an ornamental grass. Naturalized on Thames' bank at Kew."—C. E. Hubbard.



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